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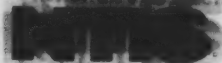
Guidance for the Reregistration of
Pesticide Products Containing
Malathion as the Active Ingredient

(U.S.) Environmental Protection Agency
Washington, DC

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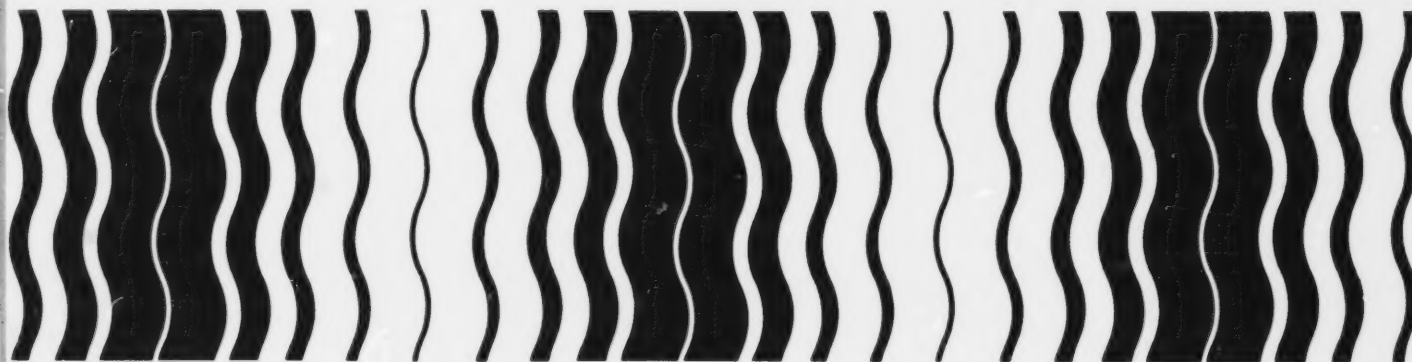
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FEBRUARY 1988

Pesticides



Guidance for the Reregistration of Pesticide Products Containing Malathion as the Active Ingredient



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GUIDANCE FOR THE
REREGISTRATION OF PESTICIDE PRODUCTS
CONTAINING
MALATHION

AS THE ACTIVE INGREDIENT

CASE NUMBER 248

CAS Registry Number 121-75-5

EPA Pesticide Chemical Code (Shaughnessy)
Number 057701

FEBRUARY, 1988

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS
WASHINGTON, D.C. 20460

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I. INTRODUCTION

EPA has established the Registration Standards program in order to provide an orderly mechanism by which pesticide products containing the same active ingredient can be reviewed and standards set for compliance with FIFRA. The standards are applicable to reregistration and future applications for registration of products containing the same active ingredient. Each registrant of a product containing an active ingredient subject to this Standard who wishes to continue to sell or distribute that product must bring his product and labeling into compliance with FIFRA, as instructed by this Standard.

The Registration Standards program involves a thorough review of the scientific data base underlying a pesticide's registration. The purpose of the Agency's review is to reassess the potential hazards arising from the currently registered uses of the pesticide; to determine the need for additional data on health and environmental effects; and to determine whether the pesticide meets the "no unreasonable adverse effects" criteria of FIFRA. In its review EPA identifies:

1. Studies that are acceptable to support the data requirements for the currently registered uses of the pesticide.

2. Additional studies necessary to support continued registration. The additional studies may not have been required when the product was initially registered or may be needed to replace studies that are now considered inadequate.

3. Labeling revisions needed to ensure that the product is not misbranded and that the labeling is adequate to protect man and the environment.

The detailed scientific review, which is not contained in this document, but is available upon request¹, focuses on the pesticide active ingredient. The scientific review primarily discusses the Agency's evaluation of and conclusions from available data in its files pertaining to the pesticide active ingredient. However, during the review of these data the Agency is also looking for potential hazards that may be associated with the end use products that contain the active ingredient. The Agency will apply the provisions of this Registration Standard to end use products if necessary to protect man and the environment.

¹The scientific reviews may be obtained from the Information Services Section, Program Management and Support Division (TS-757C), EPA, 401 M St., SW, Washington, D.C. 20460.

EPA's reassessment results in the development of a regulatory position, contained in this Registration Standard, on the pesticide and each of its registered uses. See Section IV - Regulatory Position and Rationale. Based on its regulatory position, the Agency may prescribe a variety of steps to be taken by registrants to maintain their registrations in compliance with FIFRA. These steps may include:

1. Submission of data in support of product registration;
2. Modification of product labels;
3. Modifications to the manufacturing process of the pesticide to reduce the levels of impurities or contaminants;
4. Restriction of the use of the pesticide to certified applicators or other specially trained individuals;
5. Modification of uses or formulation types; or
6. Specification of packaging limitations.

Failure to comply with these requirements may result in the issuance of a Notice of Intent to Cancel or a Notice of Intent to Suspend (in the case of failure to submit data).

In addition, in cases in which hazards to man or the environment are identified, the Agency may initiate a special review of the pesticide in accordance with 40 CFR Part 154 to examine in depth the risks and benefits of use of the pesticide. If the Agency determines that the risks of the pesticide's use outweigh the benefits of use, the Agency may propose additional regulatory actions, such as cancellation of uses of the pesticide which have been determined to cause unreasonable adverse effects on the environment.

EPA has authority under the Data Call-In (DCI) provisions of FIFRA sec. 3(c)(2)(B) to require that registrants submit data to answer our questions regarding the chemical, toxicological, and environmental characteristics and fate of a pesticide. This Registration Standard lists the data EPA believes are necessary to resolve our concerns about this pesticide. These data are listed in the Tables A, B, and C in Appendix I. Failure to comply with the DCI requirements enumerated in this Registration Standard may result in issuance by EPA of a Notice of Intent to Suspend the affected product registrations.

Registrants are reminded that FIFRA sec. 6(a)(2) requires them to submit factual information concerning possible unreasonable adverse effects of a pesticide at any time that they become aware of such information. Registrants should notify

the Agency of any information, including interim or preliminary results of studies, if that information suggest possible adverse effects on man or the environment. This requirement is independent of the specific time requirements imposed by EPA for submission of completed studies called in by the Agency and continues as long as a product is registered under FIFRA.

II. CHEMICAL COVERED BY THIS STANDARD

A. DESCRIPTION OF CHEMICAL

The following chemical is covered by this Registration Standard:

Common Name: Malathion

Chemical Name: O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate

Other Chemical Nomenclature: S-1,2-bis(ethoxycarbonyl)ethyl O,O-dimethyl phosphorodithioate; diethyl(dimethoxyphosphinothioyl)thiobutanedioate; diethyl mercaptosuccinate S-ester with O,O-dimethyl phosphorodithioate; O,O-dimethyl dithiophosphate of diethyl mercaptosuccinate [S-(1,2-dicarbethoxyethyl) O,O-dimethyl phosphorodithioate; diethyl mercaptosuccinic acid, S-ester with O,O-dimethyl phosphorodithioate

Trade Names: American Cyanamid Co. (USP 2578 652) Code No. EI4049; Calmathion; Celethion; Cythion (deodorized grade); Chemathion; Malaspray; Detmol MA 96% (Albert & Co., Germany); Emmatos; Emmatos Extra; For-Mal (Forshaw Chemicals); Fyfanon; Hilthion; Karbofos; Kop-Thion; Kypfos; Malamar; Malaphele; Malathion ULV Concentrate; Malatol; Malttox (All India Medical); Prentox Malathion 95% Spray; Sumitox; Vegfru Malatox; Zithiol; Malmed.

CAS Registry Number: 121-75-5

EPA Pesticide Chemical Code (Shaughnessy Number): 057701

Empirical Formula: $C_{10}H_{19}O_6PS_2$

Molecular Weight: 330.36

Chemical/Physical
Characteristics
(technical grade):

Color: colorless, yellow, amber, or brown
Physical state: liquid
Odor: mercaptan-like
Specific gravity: 1.2315 at 25°C
Boiling point: 156-157°C at 0.7 mm Hg
Solubility: 145 ppm in water at
25°C; completely soluble
in most alcohols, esters,
high aromatic solvents, and
ketones; poor solubility
in aliphatic hydrocarbons.
Vapor pressure: 0.00004 mm Hg at 30°C
Miscibility: miscible with most
organic solvents
Stability: may gel in contact with iron,
terreplate, or tinplate

B. DATA CALL-IN NOTICES ISSUED

The Agency has issued the following 3(c)(2)(B) Data
Call-In (DCI) Notices:

<u>Date Issued</u>	<u>Data Required</u>	<u>Status</u>
February 29, 1984	chronic feeding study in a nonrodent species	see Section III-B
	teratogenicity study in a species other than the rat	see Section III-B
May 27, 1986	reentry data (including foliar dissipation, soil dissipation, dermal exposure, and inhalation exposure	waiver requests granted

C. USE PROFILE

Type of Pesticide: Insecticide and miticide

Year of Initial Registration: 1956

Pests Controlled: Number of diverse insect pests attacking
field crops, vegetables, fruits, ornamentals,
livestock (and their premises), and stored
grain. Used in mosquito control programs
and medfly eradication programs.

Registered
Uses:

TERRESTRIAL FOOD CROP: alfalfa, almond, anise, apple, apricot, asparagus, avocado, barley, beets, beets (seed crop), bermudagrass, blackberry, blueberry, boysenberry, broccoli, brussels sprouts, cabbage, cantaloupe, carrot, casaba melons, cauliflower, celery, cherry, chestnut, citrus fruits (nursery stock), clover, collards, corn, cotton, cowpeas (hay), crenshaw melons, cucumber, currant, dandelion, date, dewberry, eggplant, endive, fig, filbert, flax, garlic, gooseberry, grapefruit, grapes, grass, grass hay, green beans, guava, honeydew melons, honey ball melons, horseradish, kale, kidney beans, kohlrabi, kumquat, leek, lemon, lespedeza, lettuce, lima beans, lime, loganberry, lupine, macadamia nut, mango, muskmelons, mustard greens, navy beans, nectarine, oats, okra, onion, onion (green), onion (seed crop), papaya, parsley, parsnip, passion fruit, pasture grasses, peach, peanuts, pear, peas, pecan, peppermint, peppers, persian melons, pineapple, plum, potato, prune, pumpkin, quince, radish, rangeland grasses, raspberry, rutabaga, rye, safflower, salsify, shallot, snap beans, sorghum, soybeans, spearmint, spinach, squash, strawberry, sugar beets, sweet potato, swiss chard, tangelo, tangerine, tomato, turnips, vetch, walnut, watercress, watermelons, wax beans, and wheat.

TERRESTRIAL NON-FOOD CROP: tobacco, tobacco (transplant beds), ornamental flowering plants, ornamental lawns and turf, ornamental nursery stock, ornamental woody plants, pine seed orchards and uncultivated non-agricultural areas.

GREENHOUSE FOOD CROP: asparagus, beans, beets, celery, cole crops (including broccoli, cabbage, kale, mustard greens, and turnips), corn, cucumber, eggplant, endive, lettuce, melons, mushrooms, onion, peas, peppers, potato, radish, spinach, squash, summer squash, tomato, and watercress.

GREENHOUSE NON-FOOD CROP: Epcot display crops and ornamental plants.

DOMESTIC AND NON-DOMESTIC OUTDOOR: outdoor domestic dwellings, wide area and general outdoor treatment (for flying insects, around commercial and industrial buildings, and around agricultural buildings).

AQUATIC FOOD CROP: cranberry and rice.

AQUATIC NON-FOOD: intermittently flooded areas, irrigation systems, and sewage systems.

FORESTRY: forest trees (including douglas-fir, eastern pine, hemlock, larch, pines, red pine, spruce, and true fir.

INDOOR: stored commodity treatment for almonds, barley, field corn, field or garden seeds, grapes (raisins), oats, peanuts, rice, rye, sorghum, sunflower, wheat, bagged citrus pulp, and cattle feed concentrate blocks (non-medicated); pet and domestic animal uses for beef cattle, cats, chickens, dairy cattle (lactating and non-lactating), dogs, ducks, geese, goats, hogs, horses (including ponies), pigeons, sheep, and turkeys; animal premise uses for dairy and livestock barns, stables and pens, feed rooms, poultry houses, manure piles, garbage cans, garbage dumps, kennels, rabbits on wire, beef cattle feed lots and holding pens, cat sleeping quarters, dog sleeping quarters, poultry houses; agricultural premise uses for cull fruit and vegetable dumps; household uses for indoor domestic dwellings, human clothing (woolens and other fabrics), mattresses; and commercial and industrial uses for bagged flour, cereal processing plants, edible and inedible commercial establishments, dry milk processing plants, edible and inedible eating establishments, edible and inedible food processing plants, packaged cereals, pet foods and feed stuff.

Methods of Application: sprays, aerosols and fogging equipment, ground and aerial equipment (including ULV), baits, paints, pet collars, dips, soil, bark and foliar application, dormant and delayed dormant application, animal dust bags and oilers, and cattle feed concentrate blocks.

Annual Usage: 15 to 20 million pounds active ingredient (1985 and 1986 data)

Predominant Usage: Industrial, commercial, and government applications constitute 40 percent of the annual U.S. usage. This category includes malathion use by institutions such as hospitals, schools, warehouses, commercial eating establishments, and food-processing

and packaging plants, and use in government pest control in programs (such as for mosquito control). Approximately one third of all malathion is used in and around the home for insect control. Agricultural crop use accounts for approximately 12 percent of the total annual usage and agricultural noncrop use (e.g., in and around farm buildings, livestock, ornamentals, and stored grain) accounts for 15 percent of the total annual usage.

Mode of Activity: Cholinesterase inhibition

Formulations: Wettable powders, dusts, granules, emulsifiable concentrates, liquids, solids, impregnated materials, and pressurized sprays

Basic Producers: The basic producers of malathion in the United States are: American Cyanamid Company, A/S Cheminova, McLaughlin Gormley King Company, Prentiss Drug and Chemical Co. Inc., Carmel Chemical Corp., Amvac Chemical Corp., Prochimie International Inc., Gowan Co., Wesley Industries Inc., Trans Chemic Industries Inc., Southern Mill Creek Products Co. Inc., Octagon Process Inc., FMC Corp., and Aceto Chemical Co. Inc.

End-use Registrants: 342

Number of Registrations: The Agency has issued 1218 registrations as of November 27, 1987. Of this total, 28 products are formulation intermediates and 10 products are technical products. There are 123 "special local need" registrations issued under FIFRA section 24(c) and 120 intrastate products.

III. AGENCY FINDINGS

A. SUMMARY

The Agency has reviewed all data supporting the registration of malathion as of May, 1987. Based on the available data, EPA has reached the following conclusions. The points summarized below are presented in further detail, in the context of EPA's science findings and additional data requirements, in Sections B through D.

1. Based on a review of the oncogenicity data for the chemical malathion, the Agency concludes that malathion is not carcinogenic to Osborne-Mendel rats or F344 rats, and malathion's metabolite malaaxon is not carcinogenic to B6C3F1 mice. Because of questionable findings in the B6C3F1 mice study using malathion and F344 rat study using malaaxon, the Agency is requiring new oncogenicity studies in these species. Upon receipt and evaluation of these studies, the Agency will reevaluate malathion's oncogenic potential.

2. Laboratory data show that technical malathion is potentially highly toxic to aquatic invertebrates, nontarget terrestrial invertebrates including bees; aquatic life stages of amphibians and bees; moderately toxic to birds; and slightly toxic to fish. Studies with end-use formulations indicate that the products tested were moderately toxic and very highly toxic to estuarine invertebrates and freshwater fish, respectively. Based on theoretical calculations, both terrestrial and aquatic uses of malathion may pose significant risk to aquatic fauna. In addition, reported fish kills and results of several field studies suggest that adverse effects to both aquatic and terrestrial fauna may result from normal use of malathion. However, these field studies and fish kill reports are not adequately documented to enable EPA to propose restrictions on the use of malathion. EPA will reassess the impacts of malathion use to nontarget organisms after the required ecological effects and environmental fate data are received and reviewed.

3. Technical malathion is a mildly acutely toxic pesticide, which is placed in Toxicity Category III based on the oral, dermal and inhalation routes of exposure. Technical malathion is nonsensitizing and only mildly irritating to the eyes and skin (Toxicity Category III and IV, respectively). Additional data are required to assess the neurotoxic potential of malathion.

4. Malathion is a cholinesterase inhibitor, reducing plasma and red blood cell cholinesterase.

5. A tolerance reassessment of malathion is not possible at this time, since most of the tolerances are not adequately

supported, and because there are gaps in the chronic toxicology data base (chronic feeding studies, teratology studies, a reproduction study, mutagenicity studies, and a metabolism study). The Theoretical Maximum Residue Contribution (TMRC) for the U.S. population average is 0.1014 mg/kg/day and the Provisional Acceptable Daily Intake (PADI) is 0.02 mg/kg/day based on cholinesterase inhibition in humans and a 10 fold uncertainty factor. The TMRC occupies 507% of the PADI.

6. The Agency is unable to assess the potential for malathion to contaminate groundwater because the environmental fate of malathion is largely uncharacterized. Preliminary data indicate that malathion is very mobile in loamy sand and loam soils. Additional data are needed in order for the Agency to assess the fate of malathion in the environment and its potential for contaminating groundwater.

As a result of this Registration Standard review, the Agency has determined that certain additional or revised label restrictions are necessary in order to remain in compliance with FIFRA. The Agency has also identified missing data required to fully evaluate the human and environmental risks associated with the use of malathion as an insecticide and miticide. These data must be developed in order to maintain registrations of existing products or register any new products containing malathion. A summary of these data gaps is given in table 1. Please note this is only a summary and complete details can be obtained by referring to the tables in Appendix I.

The Regulatory Position and Rationale section of this Registration Standard discusses the Agency's position on each of the regulatory issues concerning malathion, and the Required Labeling section contains the specific wording required for each of the labeling provisions.

TABLE 1. SUMMARY OF DATA GAPS

(Please refer to the tables in Appendix 1 for detailed information regarding these requirements)

Toxicology

Acute delayed neurotoxicity
21 day dermal toxicity--rat
90 day inhalation--rat
Chronic toxicity (rodent and nonrodent)--using malathion
Chronic toxicity (rodent)--using malaoxon
Oncogenicity (mouse)--using malathion
Oncogenicity (rat)--using malaoxon
Teratogenicity--rat
Reproduction
Mutagenicity testing (gene mutation, structural chromosomal aberration and other genotoxic effects)
Metabolism
Domestic Animal Safety Testing

Environmental Fate/Exposure

Hydrolysis
Aerobic and anaerobic soil metabolism
Anaerobic and aerobic aquatic metabolism
Terrestrial field dissipation
Leaching and adsorption/desorption
Soil dissipation
Aquatic (sediment) dissipation
Forestry dissipation
Photodegradation in air, soil, and water
Volatility (lab)
Rotational crops (confined)
Accumulation: fish
Accumulation: irrigated crops
Accumulation: in aquatic non-target organisms
Spray drift data

Fish and Wildlife

Acute toxicity to freshwater invertebrates--TEP^{1/}
Acute toxicity to estuarine and marine organisms--TGAI and TEP^{1/}
Fish early life stage and aquatic invertebrate life cycle
Avian reproduction
Residual toxicity to bees

^{1/} TEP = Typical end-use product
TGAI = Technical grade active ingredient

Residue Chemistry

Storage stability data

Plant metabolism data

Animal metabolism data (including direct animal treatment)

Residue data (except for flax seed, hops, and non-medicated cattle feed concentrate blocks)

Processing studies

Residue data on stored, unfinished tobacco

Residue data to support use in food areas of food-handling establishments

Residue data in water

Product Chemistry

All product chemistry studies

B. PRELIMINARY HEALTH RISK ASSESSMENT

Numerous data gaps exist for malathion and few definitive conclusions can be made pending receipt of additional data. The following assessment is based upon the data available.

1. Acute Toxicity

With the exception of a requirement for an acute delayed neurotoxicity study, there are adequate acute toxicity studies. Technical malathion is mildly toxic on an acute oral, dermal, and inhalation basis. It falls in Toxicity Category III for oral exposure based on acute oral toxicity values ranging from 1522 to 1650 mg/kg in male rats, and ranging from 1546 to 1945 mg/kg in female rats. It is in Toxicity Category III for dermal exposure based on acute dermal toxicity values of >2000 mg/kg in male and female rats and rabbits. It is also in Toxicity Category III for inhalation exposure based on acute inhalation toxicity values ranging from 1.7 to >4.0 mg/m³ in rats. Technical malathion is only mildly irritating to the eye (Toxicity Category III), based on findings of mild conjunctival reactions in male rabbits' eyes at 72 hours postapplication. Slight dermal irritation was reported in rabbits exposed for 4 hours, semioccluded, to doses of 0.5 ml, placing technical malathion in Toxicity Category IV for this route of exposure. Results of acceptable dermal sensitization studies show that technical malathion is nonsensitizing by dermal application. No data are available on the acute delayed neurotoxicity of malathion in the hen and, since malathion is an organophosphate, a study is required.

2. Subchronic Toxicity

No data are available on the subchronic oral toxicity of malathion in rodent and non-rodent species. The Agency is not requiring these studies, however, since the results from the rodent and non-rodent chronic feeding studies can be translated to these subchronic feeding studies. A 21-day dermal study is required since many use patterns of malathion involve repeat applications in a manner that would result in skin exposure. A subchronic neurotoxicity study may be required if the the results of the required acute delayed neurotoxicity study show effects. A subchronic inhalation study is required since inhalation exposure may occur from indoor use of malathion.

3. Chronic Toxicity

The Agency reviewed a dog chronic feeding study submitted in response to the 1984 Data Call-In for chronic toxicology. This study is considered unacceptable because an NOEL was not identified for the following parameters: increased liver and kidney weights; elevated platelet count; decreased creatinine in both sexes; decreased blood urea nitrogen (BUN) in males; inhibition of serum glutamate pyruvate transaminase (SGPT) in males; and inhibition of erythrocyte and plasma cholinesterases in both sexes. A new dog chronic feeding study is required.

A two year Sprague-Dawley rat study was reviewed by the Agency in 1983 and determined to be acceptable (NOEL = 100 ppm and not oncogenic). A re-examination of this study has revealed certain deficiencies, and the Agency no longer believes that the study permits valid conclusions concerning the chronic toxicity of malathion for the reasons noted below:

- ° The summary tables do not distinguish between animals sacrificed at term and animals found dead, sacrificed moribund or accidental deaths. The summary tables combine all animals under one category.
- ° Pathology slides were not read blind. Each pathologist had prior knowledge of the dose level administered to each animal.
- ° There is no indication that a numerical rating for the degree or severity of change observed by each pathologist was used.
- ° There were several pathologists involved in reading the slides raising substantial concern for consistency and uniformity.
- ° Animals which died, sacrificed moribund or accidental deaths were not examined in a manner to preclude autolysis of tissue.
- ° Animals in all groups, including controls, suffered from a substantial degree of lung disease, kidney degenerative changes, generalized calcification, lymphadenitis, and inflammation of the reticuloendothelial (RE) system, significant incidence of pituitary chromophobe adenoma (particularly females), and an increase in medial otitis of the ear. The chronic nature and advanced stages of these diseases illustrate that changes due to aging were prevalent in all groups. The significant degree of bronchopneumonia and acute/chronic lung disease could have been caused by pathogens as much as by age, yet there was no apparent attempt to identify such pathogens. Many of the early deaths in this study were attributed to lung disease. The substantial amount of geriatric change in all groups makes it extremely difficult to separate or identify normal aging processes from compound-related effects.

° Kidney, pituitary, adrenal, and thyroid weights were selectively screened and eliminated from the organ weight and organ-to-body weight comparisons if they were above or below preselected values.

° Hematology and urinalysis measurements were performed at 3, 6, 12, and 24 months, often in different animals. Clinical chemistry parameters were examined at 24 months only. Brain cholinesterase activity was not examined. Therefore, sufficient information for examining biochemical and clinical effects in a chronic bioassay were not obtained.

A new chronic feeding study is required in the F344 rat. A chronic toxicity study is also required in the rodent using malaoxon. This study should be performed as a combined chronic/oncogenic bioassay using the F344 rat. Refer to the following discussion.

4. Oncogenicity - Malathion

Acceptable oncogenicity studies have been performed using malathion in the Osborne-Mendel rat and Fischer 344 rat. A two-year Sprague-Dawley rat study and a mouse study have also been reviewed and was determined to be unacceptable for use as an oncogenicity study. These studies are discussed below:

a. NCI/NTP Malathion Oncogenicity Study in the Osborne Mendel Rat

In this study, malathion (purity >95%) was administered via the diet at time-weighted average dosage levels of 4700 and 8150 ppm for 80 weeks and then animals were removed from test diets and observed for 29 to 33 weeks. Low-dose animals received 8000 ppm malathion in the diet for an initial 14 weeks, which was then adjusted to 4000 ppm for an additional 66 weeks. High-dose animals received 12,000 ppm for 3 weeks followed by 8000 ppm for 77 weeks.

Based on the results of this study, the Agency concludes that malathion is not carcinogenic in Osborne-Mendel rats. According to the original NCI/NTP review, there was a statistically significant ($p = 0.026$) dose-related trend for follicular cell carcinomas/adenomas/ hyperplasia of the thyroid in female rats. However, results of the Fischer Exact Test for direct comparison between groups was not significant ($p = 0.05$). NCI/NTP noted that more dosed males than dosed females had either tumors or hyperplasia of the follicular cells of the thyroid, but a higher incidence among male controls rendered the results not significant in males.

NCI/NTP did not consider the thyroid tumors to be related to malathion administration. In a reexamination of the same data by the NCI/NTP in 1985, it was again concluded that malathion showed no evidence of carcinogenicity in male and female Osborne-Mendel rats.^{2/} The Agency agrees with the NCI/NTP that malathion is not carcinogenic in Osborne-Mendel rats.

b. NCI/NTP Malathion Oncogenicity Study in the F344 Rat

In this study, malathion (purity 95%) was administered to F344 rats via the diet at dosage levels of either 2000 or 4000 ppm for 103 weeks and then rats were observed for an additional 2 or 3 weeks. Based on the results of this study, the Agency concludes that malathion is not carcinogenic in F344 rats.

In the original evaluation of this bioassay, NCI/NTP concluded that under the conditions of the test, malathion was not carcinogenic in F344 rats of either sex. In a histopathology reexamination of this study by the NCI/NTP, it was again concluded that there was no evidence of carcinogenicity in male or female F344 rats.¹ The NCI/NTP reexamination noted, however, that malathion may have increased the incidences of pheochromocytoma of the adrenal glands and leukemia in male F344 rats, primarily in the low-dose group (the incidences for the tumors in males were: pheochromocytoma, control 5/49, low dose 10/48, high dose 6/46; leukemia, control 13/50, low dose 20/50, and high dose 8/49). NCI/NTP noted that these slight increases were not statistically significant by incidental tumor tests or by Fischer's Exact test. NCI/NTP did not regard them as being related to the administration of malathion.

The Agency agrees with the conclusions of the NCI/NTP, but notes that the dose levels employed in this study were approximately one-half of those employed in the NCI Osborne-Mendel rat study, and that therefore it is unlikely the maximum tolerated dose was reached in females.

c. Food and Drug Research Laboratories Study in Sprague-Dawley Rat

This study was determined by the Agency to be unacceptable for use as either a chronic rat toxicity study or as a rat oncogenicity study. An independent reevaluation of the microscopic slides from this study is required in order to determine the

^{2/} Huff, J.E., R. Bates, S.L. Eustis, J.K. Haseman, E.E. Connell. (1985) Malathion and Malaoxon: Histopathology Reexamination of the National Cancer Institute's Carcinogenesis Studies. Environmental Research 37:154-173.

acceptability of this study. These must include all doses and both sexes for the following tissues: liver, lung, kidney, pituitary, spleen, lymph nodes, mammary gland, reproductive organs, adrenal gland, skin/ear, pancreas, thyroid, and heart. The reevaluation must include a grading of the severity of identified changes. The slides must be reread blind, without prior knowledge of dose level.

d. NCI/NTP Malathion Oncogenicity Study in the B6C3F1 Mouse

In this study, malathion (purity 95%) was administered to B6C3F1 mice via the diet at one of two doses, either 8000 or 16,000 ppm; for 80 weeks. It was then removed from test diets and the mice were observed for 14 to 15 weeks.

In evaluating this bioassay, NCI/NTP concluded that under the conditions of the study, there was "no clear evidence" of an association between malathion administration and tumor incidence. The report noted a possible increased incidence of hepatocellular carcinoma in male mice. This tumor was observed at the following incidences: matched controls 2/10, pooled controls 5/49, low dose 7/48, and high dose 11/49. Neoplastic nodules occurred in 3/49 pooled controls, and 6/49 high-dose animals yielding overall incidences of 8/49 in pooled controls and 17/49 in the high dose group. When combined, using pooled control data, there was a dose-related trend ($P = 0.019$). For the direct comparison of the high-dose and pooled control groups ($p = 0.031$ Fisher's Exact Test), NCI/NTP employed as its criterion of significance $p = 0.025$, based on Bonferroni adjustments, and hence did not consider this a positive finding. A similar conclusion was reached by NCI/NTP with respect to data derived by time-adjusted analyses: matched controls, 2/9; pooled control, 8/48; low dose, 7/47; high dose, 17/49. NCI/NTP noted that historical control incidence data for hepatocellular carcinoma in this strain of mouse often is higher than that observed in the high-dose group seen in this particular study. This study was not reexamined by the NCI/NTP.

Because of study design flaws and the questionable liver findings (i.e. dose-related trend ($p = 0.019$) and increased incidence at hepatocellular carcinomas at the high dose ($p = 0.031$), another study in mice is required.

5. Oncogenicity (Metabolite)

The NCI/NTP has performed oncogenicity studies on the cholinesterase-inhibiting malathion metabolite malaoxon, in the F344 rat and the B6C3F1 mouse. These studies are discussed below.

a. NCI/NTP Malaoxon Study in the F344 Rat

In this study, malaoxon (purity > 95%) was administered to F344 rats via the diet at dosage levels of either 500 or 1000 ppm for 103 weeks and were then observed for up to an additional 2 weeks.

NCI/NTP concluded that under the conditions of the bioassay, malaoxon was not carcinogenic in F344 rats. In their review, NCI/NTP noted an increased incidence of gastric ulcers in dosed rats of both sexes, and a possible increase in thyroid C-cell adenomas or carcinomas in female rats at the high dose ($P = 0.024$ by Fisher Exact Test). A positive finding for C-cell tumors, however, was considered by NCI/NTP to be precluded by historical control data for this tumor. In a reexamination of this study, NCI/NTP concluded there was equivocal evidence for carcinogenicity of malaoxon in males and females in terms of the incidence of C-cell neoplasms of the thyroid gland.^{3/} For the thyroid C-cell adenomas/carcinomas, the respective combined incidences for control, low-dose, and high-dose groups were: males, 3/49, 3/45, and 12/49; and females, 4/48, 7/48, and 11(12)/48). NTP/NCI noted that the increases observed at the high dose were significant for both sexes (males, $p < 0.05$; females, $p = 0.05$) and there was evidence of dose-related trends. An additional finding in rereview was an increase ($p < 0.05$) in benign mammary gland tumors in low dose females. This increase was not considered associated with malaoxon administration since an increase was not seen in the high-dose group and the incidence among concurrent controls was unusually low.

The percent survival at week 90 of the study for males and females, respectively, was 80% and 82% for control, 82% and 90% for low dose, and 64% and 80% for the high dose group. The NCI/NTP indicated in their reexamination that sufficient numbers of rats of each sex were at risk for the development of late appearing tumors. The Agency is uncertain whether the NCI/NTP evaluated or corrected for the higher mortality in the male high-dose group in a like manner with the approach taken by the Agency (survival analysis). However, in the NCI/NTP rereview of the data, statistical comparisons were made by survival-adjusted methods and by the Fisher exact test and the Cochran-Armitage

^{3/} The NCI/NTP uses five levels of interpretative evaluations in animal carcinogenesis studies; in decreasing order of strength (not potency or mechanism) of the experimental evidence, these are: (i) clear evidence of carcinogenicity, (ii) some evidence of carcinogenicity, (iii) equivocal evidence of carcinogenicity, (iv) no evidence of carcinogenicity and (v) inadequate study of carcinogenicity.

trend test.

The Agency is requiring an additional F344 rat study using malaoxon to clarify the findings in this study. The study may be performed according to the Pesticide Guidelines for a combined chronic/oncogenicity bioassay. The purpose of this study is to clarify the oncogenic potential and provide additional needed data on the effects of malaoxon on cholinesterase inhibition.

b. NCI/NTP Malaoxon Study in the B6C3F1 Mouse

In this study, malaoxon (purity > 95%) was administered to B6C3F1 mice via the diet at dosage levels of either 500 or 1000 ppm for 103 weeks and were then observed for up to an additional 2 weeks. Based on a review of this study, the Agency concludes that malaoxon is not carcinogenic in B6C3F1 mice. NCI/NTP has concluded also that under the conditions of the bioassay malaoxon was not carcinogenic in B6C3F1 mice.

6. Mutagenicity

No data are available on the mutagenic potential of malathion. Studies are required in all of the following mutagenicity test areas: gene mutation, structural chromosomal aberration, and other genotoxic effects.

7. Developmental Effects (Teratogenicity)

A rat teratology study is required to support registration of products containing malathion. There is an acceptable rabbit teratology study. In this study, New Zealand rabbit bred does, 20 per group, were administered, via gastric intubation, single daily doses of the vehicle (corn oil) or malathion dissolved in corn oil on days 6 to 18 of gestation. Doses employed were 25, 50, and 100 mg/kg body weight. The animals were observed between days 0 to 20 of gestation. No evidence of developmental effects was seen. Body weight gain was decreased in dams at 50 mg/kg/day and increases in mean percent of resorptions were observed at 50 and 100 mg/kg/day. In accordance with the Agency's Guidelines for the Health Assessment of Suspect Developmental Toxicants (FR 51: September 24, 1986, p. 34031), the increases in these parameters at the mid and high doses are to be viewed as evidence of developmental toxicity. Hence, the developmental No Observable Effect Level NOEL is 25 mg/kg/day. The Maternal NOEL = 25 mg/kg/day.

The Agency reviewed a rat teratology study, in which no evidence of maternal or fetal toxicity at doses up to and

including 300 mg/kg/day (the highest dose tested) was noted. This study is considered to be inadequate to assess developmental toxicity, since maternal toxicity was not achieved. Additional deficiencies of the study include a lack of information as to description of test substance, batch and/or lot number, percent purity, contaminants, age of rats employed, description of animal housing, feeding, and watering conditions, chow used and its composition, daily observations of animals, method of animal sacrifice, and sex of pups.

8. Reproduction

A reproduction study in the rat is required to support registration of products containing malathion. The Agency reviewed a 3-generation rat study, in which rats were exposed via the dietary route of exposure to dose levels of 0, 100, 500, and 2500 ppm, and determined that the study was unacceptable due to use of an insufficient number of animals per dose, and lack of individual autopsy data, microscopic and skeletal examinations, histopathology, and other detailed individual animal data. A new reproduction study is required.

9. Domestic Animal Safety Testing

A study is required to determine the effect of malathion fed to chickens. The Agency has reviewed data which indicates that malathion may cause adverse effects to chickens, as evidenced by enhanced embryo toxicity and reduced egg hatchability, when ingested at relatively low dietary concentrations (1 to 10 ppm)^{4/}. A study is required to confirm or refute this finding.

^{4/} Sauter, E.A. and E.E. Steele (1971). The Effect of Low Level Pesticide Feeding on the Fertility and Hatchability of Chicken Eggs. Poultry Science (51)(1): 71-76.

C. ENVIRONMENTAL PROFILE

1. Ecological Effects

Avian Species

Based on acceptable laboratory data, technical malathion is characterized as moderately toxic to upland game birds and slightly toxic to waterfowl on an acute oral basis. The single oral dose toxicity (LD₅₀) values to ring-necked pheasant (an upland game bird) and mallard (a waterfowl species) are 167 ppm and 1485 ppm, respectively. Based on acceptable subacute dietary studies (LC₅₀) in birds, technical malathion is characterized as slightly toxic to both upland game birds and waterfowl, with a subacute toxicity value of 3497 ppm for bobwhite quail and >5000 ppm for mallards. Based on these data, it is unlikely that malathion use poses any significant acute risks to avian species.

Birds can be exposed to malathion via both the terrestrial and aquatic uses of the pesticide. In addition, most uses allow for multiple applications and may result in repeated exposure to birds during the breeding season. There are no chronic toxicity data upon which to estimate the hazards that repeated use of malathion poses to birds. Therefore, an avian reproduction study is required. The Agency will reevaluate malathion risk to birds after receipt and evaluation of the reproduction study and other data.

Aquatic Species

Based on acceptable laboratory data, technical malathion is characterized as slightly toxic to fish and highly toxic to freshwater invertebrates on an acute basis. The 96-hour acute toxicity (LC₅₀) value for rainbow trout, a coldwater species, is 200 ppm, and the 96-hour LC₅₀ value for bluegill, a warmwater species, ranges from 20 to 103 ppm. Studies conducted with a 55% active ingredient emulsifiable concentrate formulation indicate that the formulation is very highly toxic to the bluegill (LC₅₀=0.01 ppm) and rainbow trout (LC₅₀ = 0.03 ppm). The representative 96-hour LC₅₀ value for freshwater invertebrates is 1 ppm for Daphnia magna.

Fish early life stage and aquatic invertebrate life cycle studies are not available for this chemical. These studies are required because some of the uses (e.g., rice, mosquito larvicide, and cranberry) involve direct application to water, and many of the terrestrial uses are likely to result in runoff that may be transported to a water body. The requirement for a fish life cycle study is reserved pending submission and review of the fish early life stage study. Tests of acute toxicity to freshwater invertebrates for a typical end-use product are required, since malathion may be applied directly to water.

There are limited data describing the effects of malathion to marine and estuarine organisms. While data indicate that malathion is practically nontoxic to oysters ($EC_{50} > 1000$), studies with a formulated product indicate that malathion is moderately toxic to mysid shrimp (EC_{50} ranges from 2.6 to 3.1 ppm).

Marine and estuarine testing is required since malathion may reach the marine and estuarine environment through both direct and indirect applications. Testing requirements are for a 96-hour LC_{50} study on a marine or estuarine shrimp species and a 96-hour LC_{50} study on a marine or estuarine fish species.

Based on theoretical calculations, application of malathion to land can result in estimated environmental concentrations (EECs) in aquatic environments of 0.3 ppm due to surface runoff and aerial drift. The highest EEC resulting from direct application of malathion to water (11 ppm) is much greater than the lowest LC_{50} (0.01 ppm) for a freshwater fish species (bluegill). Therefore, fish may be at risk from exposure to malathion via both aquatic and terrestrial uses. The Agency has reviewed published articles and other reports regarding fish kills attributed to the use of malathion. These reports support laboratory toxicity data findings. However, the Agency cannot use these reports in its assessment of the chemical due to report deficiencies ((e.g. lack of replication, no controls, inadequate monitoring and lack of information on dose used). Acute studies, chronic studies, residue chemistry data and environmental fate data are needed to enable the Agency to assess the impact to fish species.

Malathion is potentially highly toxic to aquatic life stages of amphibians. This is based on acute toxicity values of 0.20 ppm to the Western chorus frog and 0.42 ppm to the Fowler's toad. Based on these data, precautionary labeling concerning the effects of malathion to aquatic life is necessary.

2. Honey Bees

There is sufficient information to characterize malathion as highly toxic to honey bees (acute toxicity value = 0.27 ug/bee) when bees are exposed to direct treatment. Because data indicate a high toxicity to bees, additional data are required to fully assess the toxicity to honey bees from the outdoor use patterns. Precautionary labeling is necessary for all malathion products intended for outdoor applications.

3. Endangered Species

There is sufficient information to indicate that current registered uses of malathion may adversely affect endangered species. Threshold levels for concern for aquatic endangered species ($EEC > 1/20 LC_{50}$) are exceeded both by direct aquatic applications and terrestrial applications (due to runoff

and aerial drift). The EECs based on terrestrial applications exceed criteria for concern for some terrestrial species (EEC > 1/10 LC₅₀) for many of malathion's uses.

Malathion has been identified by the Office of Endangered Species (OES), U.S. Fish and Wildlife Service, as being likely to jeopardize the continued existence of certain endangered species when used on range and pastureland, grain crops, soybeans, sorghum and cotton. Based on this determination, OES specified reasonable and prudent alternatives to avoid jeopardizing the continued existence of the identified species. EPA is working with the Fish and Wildlife Service and other Federal and State agencies to implement the alternatives in a technically sound manner.

4. Environmental Fate

The Agency is unable to fully assess the environmental fate of malathion because acceptable data are lacking. Data are required as set forth in Table A of this document. Preliminary data indicate that malathion is very mobile in loamy sand and loam soils. K_d values reported were 0.73 to 0.95.

D. PESTICIDE INCIDENT REPORTS

Data on occupational illness due to malathion exposure have been received from California, which requires that all such physician-treated illnesses be reported to the State. Between 1981 and 1985, malathion was the third most common cause of pesticide illness, but was only the eleventh most common cause of hospitalized pesticide illness. Applicators accounted for approximately half of all the illnesses reported from 1982 to 1986. Less than 3 percent of these illnesses involved field reentry, while 28 percent were due to exposure to other residues or fumes after application, especially indoor application. An analysis of indoor poisonings in California (1975 to 1981) revealed that inhalation of malathion from spills or contaminated air was the principal source of exposure. Another 14 percent of the illnesses were due primarily to spray drift or other coincidental exposure.

The California data represent a complete count or census of all occupationally related cases. These data indicate that malathion can cause serious poisoning problems. From the California census, there was an average of 1.3 incidents of occupational illness per million pounds of pesticide sold from 1981 to 1985 data. For malathion, there were 6.5 illnesses per million pounds sold, or about 5 times as many occupational illnesses than the average pesticide.

E. TOLERANCES

1. Tolerances Issued

Tolerances have been established for residues of malathion in raw agricultural commodities (RACs), in meat, fat, and meat byproducts (refer to 40 CFR 180.111), and in processed food (21 CFR 193.260) and animal feeds (21 CFR 561.270) as listed below:

TABLE 2
SUMMARY OF TOLERANCES FOR MALATHION
(ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
<u>Root and Tuber Vegetables Group</u>				
Beets	8.0	0.5	-	0.5
Carrots	8.0	0.5	8.0	0.5
Horseradish	8.0	0.5	-	0.5
Parsnips	8.0	0.5	-	0.5
Potatoes	8.0	0.5	8.0	0.5
Radishes	8.0	0.5	8.0	0.5
Rutabagas	8.0	0.5	-	0.5
Salsify	8.0	3.0	-	0.5
Sugar beet roots	1.0	-	-	0.5
Sweet potatoes	1.0	-	1.0	0.5
Turnips	8.0	0.5	-	0.5
<u>Leaves of Root and Tuber Vegetables Group</u>				
Beet greens	8.0	-	-	-
Salsify tops	8.0	3.0	-	-
Sugar beet tops	8.0	-	-	-
Turnip tops	8.0	0.5	-	-
<u>Bulb Vegetables Group</u>				
Garlic	8.0	0.5	8.0	-
Leeks	8.0	3.0	-	-
Onions (green and bulb)	8.0	0.5 (dry) 3.0 (green)	8.0	-
Shallots	8.0	3.0	-	-
<u>Leafy Vegetables Group</u>				
Celery	8.0	1.0	8.0	1.0
Dandelions	8.0	6.0	-	-
Endive (escarole)	8.0	6.0	-	8.0
Lettuce	8.0	6.0	8.0	8.0
Parsley	8.0	6.0	-	-
Spinach	8.0	6.0	8.0	8.0
Swiss Chard	8.0	-	0.5	0.5

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
<u>Brassica Leafy Vegetables Group</u>				
Broccoli	5.0	0.5	8.0	5.0
Brussels sprouts	8.0	6.0	-	-
Cabbage	8.0	6.0	8.0	8.0
Cauliflower	8.0	0.5	-	0.5
Collards	8.0	0.5	-	0.5
Kale	8.0	6.0	-	3.0
Kohlrabi	8.0	0.5	-	0.5
Mustard greens	8.0	-	-	-
<u>Legume Vegetables Group</u>				
Beans (succulent and dried)	8.0	2.0	8.0	8.0 (dried) 2.0 (green)
Lentils	8.0	3.0	-	8.0
Lupine seed	8.0	-	-	-
Peas	3.0	0.5	8.0	0.5
Soybeans	8.0	-	8.0	-
<u>Foliage of the Legume Vegetables Group</u>				
Cowpea forage and hay	135.0	0.1(N) ^{5/}	-	-
Pea vines and hay	8.0	0.1(N) ^{5/}	-	-
Soybean forage, hay, and straw	135.0	0.1(N) ^{5/}	-	-
<u>Fruiting Vegetables (except cucurbits) Group</u>				
Eggplant	8.0	0.5	8.0	0.5
Peppers	8.0	0.5	8.0	0.5
Tomatoes	8.0	3.0	8.0	3.0
<u>Cucurbit Vegetables Group</u>				
Cucumbers	8.0	3.0	8.0	-
Melons	8.0	8.0	8.0	-
Pumpkins	8.0	3.0	-	-
Squash	8.0	3.0	8.0	-
<u>Citrus Fruits Group</u>				
Grapefruit	8.0	-	50.0	4.0
Kumquats	8.0	-	50.0	4.0
Lemons	8.0	-	50.0	4.0
Limes	8.0	-	50.0	4.0
Oranges	8.0	-	50.0	4.0
Tangerines	8.0	-	50.0	4.0

^{5/} (N) negligible residue

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
<u>Pome Fruits Group</u>				
Apples	8.0	2.0	8.0	2.0
Pears	8.0	2.0	8.0	0.5
Quinces	8.0	-	-	-
<u>Stone Fruits Group</u>				
Apricots	8.0	8.0	-	-
Cherries	8.0	6.0	-	6.0
Nectarines	8.0	-	-	-
Peaches	8.0	6.0	8.0	6.0
Plums (fresh prunes)	8.0	8.0	-	6.0
<u>Small Fruits and Berries Group</u>				
Blackberries	8.0	8.0	-	8.0
Blueberries	8.0	8.0	-	0.5
Boysenberries	8.0	8.0	-	-
Cranberries	8.0	8.0	-	-
Currants	8.0	8.0	-	-
Dewberries	8.0	8.0	-	-
Grapes	8.0	8.0	8.0	8.0
Gooseberries	8.0	8.0	-	-
Loganberries	8.0	8.0	-	-
Raspberries	8.0	8.0	-	8.0
Strawberries	8.0	8.0	8.0	1.0
<u>Tree Nuts Group</u>				
Almonds	8.0 (almonds) 50.0 (hulls) 50.0 (shells)	-	8.0 8.0	8.0 8.0
Chestnuts	1.0	-	8.0	8.0
Filberts	1.0	-	8.0	8.0
Macadamia nuts	1.0	-	8.0	8.0
Pecans	8.0	8.0	8.0	8.0
Walnuts	8.0	-	8.0	8.0
<u>Cereal Grains Group</u>				
Barley	8.0	8.0	-	8.0
Corn (field and fresh)	2.0 (fresh corn) 8.0 (corn grain)	8.0	2.0 (corn) 8.0 (corn)	8.0 8.0
Oats	8.0	8.0	-	8.0

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
Rice	8.0	8.0	8.0	8.0
Rye	8.0	2.0	-	8.0
Sorghum	8.0	8.0	-	8.0
Wild rice	8.0	8.0	-	8.0
Wheat	8.0	8.0	8.0	8.0
<u>Forage, Fodder, and Straw of Cereal Grains Group</u>				
Sorghum forage and fodder	8.0	0.1(N) <u>5</u> /	8.0	-
<u>Grass Forage, Fodder, and Hay Group</u>				
Grass forage	135.0	0.1(N) <u>5</u> /	-	-
Grass hay	135.0	0.1(N) <u>5</u> /	-	-
<u>Non-Grass Animal Feeds (Forage, Fodder, Straw, and Hay) Group</u>				
Alfalfa forage and hay	135.0	0.1(N) <u>5</u> /	135.0	-
Birdsfoot trefoil forage and hay	135.0	0.1(N) <u>5</u> /	-	-
Clover forage and hay	135.0	0.1(N) <u>5</u> /	-	-
Lespedeza forage and hay	8.0 (seed) 135.0 (hay & straw)	0.1(N) <u>5</u> /	-	-
Lupine forage and hay	135.0	0.1(N) <u>5</u> /	-	-
Vetch forage and hay	8.0 (seed) 135.0 (hay & straw)	0.1(N) <u>5</u> /	-	-
<u>Miscellaneous Commodities</u>				
Asparagus	8.0	6.0	8.0	-
Avocados	8.0	8.0	8.0	-
Citrus Pulp	50.0	-	50.0	-
Cottonseed	2.0	-	2.0	-
Dates	8.0	-	-	-
Figs	8.0	-	8.0	8.0
Flax	0.1 (seed) 1.0 (straw)	0.1(N) <u>5</u> /	-	-
Guavas	8.0	-	8.0	-
Hops	1.0	-	-	-
Mangoes	8.0	-	8.0	-
Mint	8.0	-	-	-

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
Mushrooms	8.0	-	-	-
Non-medicated cattle feed conc. blocks	10.0	-	-	-
Okra	8.0	3.0	8.0	-
Papayas	1.0	8.0	1.0	-
Passion fruit	8.0	-	-	-
Peanuts	8.0	-	8.0	-
Pineapples	8.0	8.0	8.0	-
Raisins	12.0	8.0	-	8.0
Safflower	0.2 (seed) 0.6 (oil)	-	0.2 (seed) 0.6 (oil)	-
Sunflower seeds	8.0	-	-	-
Watercress	8.0	6.0	-	-
Tobacco	N/A (non-food use)	N/A	N/A	N/A

Meat, Milk, Poultry, and Eggs

Cattle, fat	4.0	-	-	-
Cattle, meat	4.0	-	-	-
Cattle, meat by-product	4.0	-	-	-
Goats, fat	4.0	-	-	-

Meat, Milk, Poultry, and Eggs

Goats, meat	4.0	-	-	-
Goats, Meat	4.0	-	-	-
by-products				
Hogs, fat	4.0	-	-	-
Hogs, meat	4.0	-	-	-
Hogs, meat	4.0	-	-	-
by-products				
Horses, fat	4.0	-	-	-
Horses, meat	4.0	-	-	-
Horses, meat	4.0	-	-	-
by-product				
Sheep, fat	4.0	-	-	-
Sheep, meat	4.0	-	-	-
Sheep, meat	4.0	-	-	-
by-products				
Milk	0.5	-	-	-
Poultry, fat	4.0	-	-	-
Poultry, meat	4.0	-	-	-
Poultry, meat	4.0	-	-	-
by-products				
Eggs	0.1	-	-	-

2. Residue Data The residue data reviewed in support of the malathion tolerances may be summarized as follows:

a. The available data pertaining to metabolism of malathion in plants are inadequate. The data consists solely of information on fortified wheat grain. Additional data are required on the uptake, distribution, and metabolism of malathion in alfalfa, cotton, soybeans, and either wheat or rice following foliar applications at a rate sufficiently high to permit residue identification.

The data pertaining to metabolism of malathion in animals are inadequate. Additional metabolism studies are required that utilize ruminants and poultry. Should the metabolism of malathion in ruminants and/or poultry following oral dosing differ significantly from that in rats, swine metabolism data may also be required. Metabolism studies using cattle, poultry, and swine reflecting direct animal treatment are also required.

b. Analytical methodology for determining the levels of residues of malathion in plants and animals is adequate. Malathion is detected by the FDA-USDA multiresidue protocols. Additional methods may be required if the metabolism studies indicate that additional metabolites constitute residues of toxicological concern.

c. Storage stability data demonstrate that residues of malathion in or on frozen plant commodities are stable up to 185 days after application and in milk stored at -10°C for 98 days after application. No data are presently available for animal tissues and are required. Additional storage stability data are also required in order to evaluate the adequacy of the malathion tolerances.

d. Insufficient data are available on the magnitude and levels of and residues of malathion in all the listed crops except flax seed, hops, wild rice, and non-medicated cattle feed concentrate blocks.

e. Processing studies are required for potatoes, sugar beets, soybeans, tomatoes, oranges, apples, plums, grapes, corn, rice, sorghum, wheat, cottonseed, mint, figs, flax, peanuts, pineapples, safflower seed, sunflower, almonds, citrus pulp, and raisins.

f. Tolerances must be proposed and appropriate supporting residue data submitted for the following feed items: bean vines and hay; lentil forage and hay; cowpea seed; soybean straw;

barley forage, hay, and straw; corn forage and fodder; oat forage, hay, and straw; rice straw; rye forage and straw; straw of wild rice; sorghum fodder; lespedeza forage; lupine forage; cotton forage; mint hay; peanut hulls, hay, and vines; and pineapple forage.

g. Feed additive tolerances are required for residues of malathion in or on dried hops and spent hops.

h. A tolerance for residues of malathion in or on anise must be proposed and submitted along with appropriate supporting residue data.

i. Data are needed to support the use of malathion in food handling establishments.

j. Data reflecting the use of malathion on stored, unfinished tobacco are required.

k. A tolerance must be proposed and appropriate supporting residue data submitted for grain dust from corn, wheat, rice, soybeans and sorghum.

l. The FDA Revised Total Diet studies as well as the Surveillance and Compliance program for domestic and imported commodities employ methodology which is known to determine malathion. No tolerance exceeding residues of malathion were observed in the Total Diet studies (4/82 to 4/86) although residues were observed in the following commodities for which no tolerances exist: cooked fish (0.0005 ppm), fried breaded shrimp (0.004 ppm), fish sticks (0.008 ppm) and pudding (0.005 ppm). Positive findings of malathion were observed in various commodities of malathion in the Surveillance and Compliance program (FY 78 through 6/8/87). The USDA monitoring program for meat utilized methodology known to be capable of determining malathion. Residues within the tolerance of malathion were observed in one sample of steer liver analyzed in 1973. No other findings were reported in samples analyzed from 1972 to 1985.

m. The following changes to 40 CFR 180.111 will be proposed by the Agency:

<u>Current 40 CFR entry</u>	<u>Appropriate commodity definitions</u>
Beets (including tops)	Beet roots Beet greens
Salsify (including tops)	Salsify Salsify tops
Turnips (including tops)	Turnips

Onions (including onion greens)	Turnip tops
Plums	Onions (green and bulb)
Prunes	Plums (fresh prunes)
Almonds, shells	None ^a
Alfalfa	None ^a
Clover	Alfalfa forage
Lespedeza seed	Clover forage
Lespedeza straw	None ^a
Lupine straw	None ^a
Vetch seed	None ^a
Vetch straw	None ^a

^a Deletion from the 40 CFR recommended; not a raw agricultural commodity.

3. Toxicology

Based on a study in man in which red blood cell and plasma cholinesterase activity was inhibited at a dose of 0.34 mg/kg (the lowest effect level or LEL), a provisional acceptable daily intake (PADI) of 0.02 mg/kg/day has been calculated using a 10-fold uncertainty factor (UF). A No Observable Effect Level (NOEL) was calculated to be 16 mg/day. The PADI is provisional because the existing data base on malathion is lacking chronic toxicity studies, a teratology study, a reproduction study, mutagenicity studies, and a metabolism study.

The Theoretical Maximum Residue Contribution (TMRC) for the U.S. population average is 0.1014 mg/kg/day, occupying 507% of the PADI. For children 1 to 6 years of age, the TMRC occupies 1133% of the PADI. The TMRC is based upon current tolerance levels and an assumption that 100% of the sites are treated. Actual dietary exposure may be much lower. The Agency is not able to calculate an Anticipated Residue Contribution (ARC), which is a much more realistic estimate of dietary exposure, since no processing or anticipated residue data were available. When the required data are submitted, the Agency will conduct a full tolerance reassessment.

IV. REGULATORY POSITIONS AND RATIONALES

A. REGULATORY POSITIONS AND RATIONALES

Based on review and evaluation of all available data and other relevant information on malathion the Agency has made the following determinations:

1. Malathion is not being placed into Special Review at this time.

Rationale: Since available data are limited, the Agency is not yet able to make a determination as to whether any of the criteria specified in 40 CFR 154.7 have been met or exceeded.

2. The Agency will not approve tolerances for significant new uses until the Agency has received data sufficient to perform a tolerance reassessment.

Rationale: Data gaps exist for plant and animal metabolism, storage stability and residues in most of the raw agricultural commodities (RAC's). Data gaps exist in the area of toxicology testing (chronic feeding, oncogenicity, teratology, reproduction, mutagenicity, and metabolism). This lack of data precludes the Agency from conducting a full tolerance assessment. In addition, the TMRC occupies 507% of the PADI. For these reasons, significant new uses^{6/} will not be granted until these data gaps have been filled.

3. The Agency is concerned about the potential hazards to aquatic organisms, but is not taking any regulatory action at this time for fish and wildlife concerns.

Rationale: Based on theoretical calculations, both terrestrial and aquatic uses of malathion may pose significant risk to aquatic fauna. Reported fish kills and results of several field studies suggest that adverse effects to both terrestrial and aquatic fauna may result from normal use of malathion. However, these reports are not adequately documented to cause EPA to impose restricted use status for malathion. EPA will reassess the impacts of malathion use to nontarget organisms after the required ecological effects and environmental fate data required by this Standard have been received and reviewed. The Agency will then determine whether any regulatory action is necessary.

^{6/} "Significant new use" is defined in 44 FR 27934, May 1, 1979.
- In the case of a new food or feed use, the Agency will generally consider as significant an increase in the Theoretical Maximum Residue Contribution (TMRC) of greater than 1%.

4. The Agency is not restricting the use of malathion products at this time.

Rationale: Section 3(d)(1)(C) of FIFRA provides that some or all uses of a pesticide will be classified for restricted use if the Administrator determines that without such restriction the pesticide "may generally cause unreasonable adverse effects in man or the environment." The Agency has determined that malathion does not meet any of the risk criteria of 40 CFR 162.11, and therefore products containing malathion do not warrant restricted use classification.

5. The Office of Endangered Species (OES) in the U.S. Fish and Wildlife Service has determined that certain uses of malathion, including uses on range and pastureland, on grain crops, soybeans, sorghum and cotton, may jeopardize the continued existence of endangered species. EPA is developing a program to reduce or eliminate exposure to these species to a point where use does not result in jeopardy, and will issue notice of any necessary labeling revisions when the program is developed. No additional labeling is required at this time. Labeling requirements issued in PR Notices 87-4 and 87-5 have been withdrawn pending reissuance.

In addition, the Agency is seeking OES evaluation of additional uses of malathion, including mosquito larvicide, forestry, stone fruits, citrus, apples, pears, blueberries, cucumber, peanuts, pineapple, potatoes, tomatoes and celery.

Rationale: Technical malathion is potentially highly toxic to aquatic invertebrates, aquatic life stages of amphibians and terrestrial non-target insects including bees.

In May 1987, EPA issued PR Notices 87-4 and 87-5 in response to OES findings that certain pesticides, including malathion, jeopardized the continued existence of endangered species. Those PR Notices directed registrants to add labeling to their products which referred users to additional information that, in turn, explained limitations on use of malathion within the range of jeopardized endangered species.

Subsequent to issuance of these PR Notice, EPA identified a number of significant technical errors and inconsistencies in the information to which users would have been referred. Therefore, on January 26, 1988, the Agency issued PR Notice 88-1, which withdrew PR Notices 87-4 and 87-5 pending development of a more focused program to protect endangered species. EPA is working to correct these errors prior to requiring labeling to protect endangered species. When that program is fully developed, notice of any labeling necessary to protect endangered species will be issued.

6. In order to meet the statutory standard for continued registration, the Agency has determined that malathion products must bear revised and updated fish and wildlife toxicity warnings. Specific wording is given in Section IV.D.

Rationale: Available data indicate that malathion is potentially highly toxic to aquatic invertebrates, aquatic life stages of amphibians and bees, moderately toxic to birds, and slightly toxic to fish.

7. The Agency is deferring decisions concerning malathion's potential for contaminating groundwater until information on its environmental characteristics and fate have been submitted and reviewed.

Rationale: The Agency is unable to assess the potential for malathion to contaminate groundwater because the environmental fate of this chemical is largely uncharacterized. Preliminary data indicate that malathion is very mobile in loamy sand and loam soils. Additional data are needed in order for the Agency to assess its potential for contaminating groundwater. When these data have been received and evaluated, The Agency will assess malathion's potential for groundwater contamination and will determine whether any regulatory action is necessary.

8. The Agency is not establishing a longer reentry interval for agricultural uses of malathion beyond the minimum reentry interval (sprays have dried, dusts have settled and vapors have dispersed).

Rationale: Malathion has a relatively low acute toxicity (Toxicity Category III by the oral, dermal and inhalation routes of exposure). There have been no scientifically validated toxicological evidence showing that malathion causes adverse effects to persons entering treated areas. For these reasons, the Agency has determined that a longer reentry interval beyond the minimum established reentry (sprays have dried, dusts have settled and vapors have dispersed) is not necessary for this chemical. Upon receipt and evaluation of the toxicology data requested in this Standard, the Agency will reevaluate its position regarding the need for reentry data/reentry intervals.

9. Pesticide spray drift data requirements are imposed for the outdoor uses of malathion. Data required are droplet size spectrum and field evaluation studies.

Rationale: The Agency is concerned about the potential hazards to nontarget organisms (fish and wildlife, domestic animals and humans) caused by the drift from aerial and ground applications of malathion. These data requirements are imposed because of malathion's volatility and its ability to persist in air, and because pesticide incident data show that spray drift is a principal source of poisoning risk for humans from this chemical.

10. In order to remain in compliance with FIFRA, all malathion products intended for use indoors must bear precautions to use with adequate ventilation and to ventilate thoroughly before occupying enclosed spaces.

Rationale: The Agency has determined that a labeling precaution to use with adequate ventilation and to ventilate thoroughly before occupying enclosed spaces is necessary. This is due to a relatively high number of pesticide incidents reported for this chemical. Malathion was the third most common cause of pesticide illness in California between 1981 and 1985. Twenty-eight percent of the illnesses reported were attributed to exposure to fumes, especially from indoor application (1982-1986 data).

11. The Agency will revise the commodity definitions for certain raw agricultural commodities listed in 40 CFR 180.111 when tolerances for malathion are next revised.

Rationale: Certain listings in 40 CFR 180.111 are not appropriate and will be corrected by the Agency when tolerances for malathion are next revised (e.g. the tolerance listing for beets (including tops) will be revised to enumerate beet roots and beet greens separately.

12. The Agency has identified certain data that will receive priority review when submitted to the Agency.

Rationale: Certain data are essential to the Agency's assessment of this pesticide and its uses and/or may trigger the need for further studies which should be initiated as soon as possible. The following studies have been identified to receive priority review as soon as they are received by the Agency:

§158.135 Toxicology

81-7	Delayed Neurotoxicity
82-2	21-Day Dermal Toxicity
82-4	90-Day Inhalation

§158.125 Environmental Fate

161-1	Hydrolysis
161-2	Photodegradation in Water
161-3	Photodegradation in Soil
162-1	Aerobic Soil Metabolism
162-2	Anaerobic Soil Metabolism
163-1	Leaching and Adsorption/Desorption
164-1	Terrestrial Field Dissipation
201-1	Droplet Size Spectrum and Drift Field Evaluation

§158.145 Wildlife and Aquatic Organisms

- 72-2 Acute Toxicity to Freshwater Invertebrates (TEP)
- 72-3 Acute Toxicity to Estuarine and Marine Organisms (TGAI and TEP)
- 72-4 Fish Early Life Stage and Aquatic Invertebrate Life Cycle

§158.125 Residue Chemistry

- 171-4 Plant and Animal Metabolism Data
- 171-4 Storage Stability Data
- 171-4 Residue Data

13. While data gaps are being filled, currently registered manufacturing-use products (MPs) and end-use products (EPs) containing malathion may be sold, distributed, formulated, and used, subject to the terms and conditions specified in this Standard. However, significant new uses will not be registered. Registrants must provide or agree to develop additional data, as specified in the Data Appendices, in order to maintain existing registrations.

Rationale: Even when authorized under FIFRA sections 3(c)(2)(B) and 3(c)(7) the Agency may elect not to cancel or withhold registration even though data are missing or are inadequate. Issuance of this Standard provides a mechanism for identifying data needs. These data will be reviewed and evaluated, after which the Agency will determine if additional regulatory actions are necessary. The Agency has elected not to consider registration of any significant new uses while data gaps are being filled and data evaluated.

B. CRITERIA FOR REGISTRATION

To be registered or reregistered under this Standard, MPs must contain malathion as the sole active ingredient. Registrants must comply with all terms and conditions described in this section, including submission of an up-to-date Confidential Statement of Formula, submission of revised labeling, commitment to fill data gaps on the schedule specified by the Agency and, when applicable, offer to pay compensation as required by FIFRA sections 3(c)(1)(D) and 3(c)(2)(D).

C. ACCEPTABLE RANGES AND LIMITS

1. Product Composition Standard

Each MP proposed for registration or reregistration must be fully described with an appropriate certification of limits, stating maximum and minimum amounts of the active and intentionally added inert ingredients which are present in the product, as well as impurities found at greater than 0.1 percent.

2. Acute Toxicity Limits

The Agency will consider registration of MPs containing malathion in any Toxicity Category provided the product labeling bears appropriate precautionary statements for the acute toxicity category in which each product is placed.

3. Use Patterns

All MPs must be labeled for formulation into other MP products or into end use products bearing federally registered uses. Labeling must specify sites, which are listed in Use Patterns, Appendix III. However, no use may be included on the label where the registrant fails to agree to comply with the data requirement in Table A for that use pattern.

D. REQUIRED LABELING

All MPs and EPs must bear appropriate labeling as specified in 40 CFR 162.10, PR Notices 83-2 and 83-3, precautions and warnings listed in the Malathion Use index (Appendix III), and as indicated in this Registration Standard (as appropriate).

In order to remain in compliance with FIFRA, no EP or MP containing malathion may be released for shipment by a registrant or producer of that product after March 31, 1989, unless the product complies with these requirements.

In order to remain in compliance with FIFRA, no EP or MP containing malathion may be distributed, sold, offered for sale, held for sale, shipped, delivered for shipment, or received and (having been so received) delivered or offered to be delivered by any person after March 31, 1990, unless the product bears a label which complies with the requirements listed above.

1. Labeling for MPs

a. The ingredient statement for MPs must declare the active ingredient as:

Malathion: O,O-diethyl phosphorodithioate of
diethyl mercaptosuccinate

b. Labels for MPs must bear the following identifying phrase directly beneath the product name:

"An insecticide and miticide for formulating use only."

c. In the directions for use, the following statement must appear:

"Formulators using this product are responsible for obtaining EPA registration of their formulated products."

d. In the directions for use, the following statement regarding acceptable use patterns must appear:

"For formulation into end-use insecticide products intended only for (list acceptable sites)."

NOTE: No use may be included on the label where the registrant fails to agree to comply with the data requirements for that use pattern.

e. If detailed instructions for formulating are not provided on the label, the following statement must appear:

"Refer to attached Technical Bulletin for formulating and other information."

NOTE: The technical bulletin must be submitted with the product label for Agency review.

f. The following fish and wildlife statements are required to appear under the "Environmental Hazards" heading:

This pesticide is toxic to aquatic invertebrates and aquatic life stages of amphibians. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public waters unless this product is specifically identified and addressed in a National Pollution Discharge Elimination System (NPDES) permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or the Regional Office of EPA.

2. Labeling for EPs

a. The ingredient statement for EPs must declare the active ingredient as:

Malathion: 0,0-dimethyl phosphorodithioate of
diethyl mercaptosuccinate

b. All products allowing for outdoor use on nonaquatic sites must bear the following environmental hazards statement:

"This pesticide is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water or wetlands (i.e., swamps, bogs, marshes, and potholes). Drift and runoff may be hazardous to aquatic organisms in areas near the application site. Do not contaminate water when disposing of equipment washwaters."

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

c. All products allowing for use on aquatic sites must bear the following environmental hazards statement under the "Environmental Hazards" heading:

"This pesticide is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water except as specified on this label. Do not contaminate water when disposing of equipment washwaters."

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

d. All products allowing for indoor use must bear the following ventilation statement:

Use only with adequate ventilation. After using this product indoors, ventilate thoroughly before occupying enclosed spaces. Do not allow contact with treated surface until sprays have dried.

V. PRODUCTS SUBJECT TO THIS STANDARD

All products containing one or more of the pesticides identified in Section II.A. are subject to certain requirements for data submission or changes in composition, labeling or packaging of the product. The applicable requirements depend on whether the product is a manufacturing or end use product and whether the pesticide is the sole active ingredient or one of multiple active ingredients.

Products are subject to this Registration Standard as follows:

A. Manufacturing use products containing this pesticide as the sole active ingredient are subject to:

1. The restrictions (if any) upon use, composition, or packaging listed in Section IV, if they pertain to the manufacturing use product.
2. The data requirements listed in Tables A and B²
3. The labeling requirements specified for manufacturing use products in Section IV.
4. Administrative requirements (application forms, Confidential Statement of Formula, data compensation provisions) associated with reregistration.

² Data requirements are listed in the three Tables in Appendix I of this Registration Standard. The Guide to Tables in that Appendix explains how to read the Tables.

Table A lists generic data requirements applicable to all products containing the pesticide subject to this Registration Standard. Table B lists product-specific data applicable to manufacturing use products. The data in Tables A and B need not be submitted by a producer who is eligible for the formulator's exemption for that active ingredient.

Table C lists product-specific data applicable to end use products. The Agency has decided that, in most cases, it will not require the submission of product-specific data for end use products at this time. Therefore most Registration Standards do not contain a Table C.

B. Manufacturing use products containing this pesticide as one of multiple active ingredients are subject to:

1. The data requirements listed in Table A.
2. The labeling requirements specified for manufacturing use products in Section IV.

C. End use products containing this pesticide as the sole active ingredient are subject to:

1. The restrictions (if any) upon use, composition, or packaging listed in Section IV if they pertain to the end use product.
2. If eligible for the formulator's exemption³, the data requirements listed in Table C.
3. If not eligible for the formulator's exemption, the data requirements listed in Table A and the data requirements listed in Table C.
4. The labeling requirements specified for end use products in Section IV.

D. End use products containing this pesticide as one of multiple active ingredients are subject to:

1. If not eligible for the formulator's exemption, the data requirements listed in Tables A and C.

³ If you purchase from another producer and use as the source of your active ingredient only EPA-registered products, you are eligible for the formulator's exemption for generic data concerning that active ingredient (Table A) and product-specific data for the registered manufacturing use product you purchase (Table B).

Two circumstances nullify this exemption:

1) If you change sources of active ingredient to an unregistered product, formulate your own active ingredient, or acquire your active ingredient from a firm with ownership in common with yours, you individually lose the exemption and become subject to the data requirements in Table A.

2) If no producer subject to the generic data requirements in Table A agrees to submit the required data, all end use producers lose the exemption, and become subject to those data requirements.

2. If eligible for the formulator's exemption, the data requirements listed in Table C.

3. The labeling requirements specified for end use products in Section IV.

VI. REQUIREMENT FOR SUBMISSION OF GENERIC DATA

This portion of the Registration Standard is a notice issued under the authority of FIFRA sec. 3(c)(2)(B). It refers to the data listed in Table A, which are required to be submitted by registrants to maintain in effect the registration of products containing this active ingredient.⁴

A. What are generic data?

Generic data pertain to the properties or effects of a particular active ingredient. Such data are relevant to an evaluation of all products containing that active ingredient regardless of whether the product contains other ingredients (unless the product bears labeling that would make the data requirement inapplicable).

Generic data may also be data on a "typical formulation" of a product. "Typical formulation" testing is often required for ecological effects studies and applies to all products having that formulation type. These are classed as generic data, and are contained in Table A.

B. Who must submit generic data?

All current registrants are responsible for submitting generic data in response to a data request under FIFRA sec. 3(c)(2)(B) (DCI Notice). EPA has decided, however, not to require a registrant who qualifies for the formulator's exemption (FIFRA sec. 3(c)(2)(D) and § 152.85) to submit generic data in response to a DCI notice if the registrant who supplies the active ingredient in his product is complying with the data request.

If you are granted a generic data exemption, you rely on the efforts of other persons to provide the Agency with the required data. If the registrants who have committed to generate and submit the required data fail to take appropriate steps to meet the requirements or are no longer in compliance with this data requirements notice, the Agency will consider

⁴ Registrations granted after issuance of this Standard will be conditioned upon submission or citation of the data listed in this Registration Standard.

that both they and you are not in compliance and will normally initiate proceedings to suspend the registrations of both your product(s) and their product(s) unless you commit to submit and submit the required data in the specified timeframe. In such cases, the Agency generally will not grant a time extension for submitting the data.

If you are not now eligible for a formulator's exemption, you may qualify for one if you change your source of supply to a registered source that does not share ownership in common with your firm. If you choose to change sources of supply, the Confidential Statement of Formula must identify the new source(s) and you must submit a Formulator's Exemption Statement form.

If you apply for a new registration for products containing this active ingredient after the issuance of this Registration Standard, you will be required to submit or cite generic data relevant to the uses of your product if, at the time the application is submitted, the data have been submitted to the Agency by current registrants. If the required data have not yet been submitted, any new registration will be conditioned upon the new registrant's submission or citation of the required data not later than the date upon which current registrants of similar products are required to provide such data. See FIFRA sec. 3(c)(7)(A). If you thereafter fail to comply with the condition of that registration to provide data, the registration may be cancelled (FIFRA sec. 6(e)).

C. What generic data must be submitted?

You may determine which generic data you must submit by consulting Table A. That table lists the generic data needed to evaluate current uses of all products containing this active ingredient, the uses for which such data are required, and the dates by which the data must be submitted to the Agency.

D. How to comply with DCI requirements.

Within 90 days of your receipt of this Registration Standard, you must submit to EPA a completed copy of the form entitled "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1, enclosed) for each of your products. On that form you must state which of the following six methods you will use to comply with the DCI requirements:

1. You will submit the data yourself.
2. You have entered into an agreement with one or more registrants to jointly develop (or share in the cost of developing) the data, but will not be submitting the data yourself. If you use this method, you must state who will submit the data on which you will rely. You must also provide

EPA with documentary evidence that an agreement has been formed which allows you to rely upon the data to be submitted. Such evidence may be: (1) your letter offering to join in an agreement and the other registrant's acceptance of your offer, (2) a written statement by the parties that an agreement exists, or (3) a written statement by the person who will be submitting the data that you may rely upon its submission. The Agency will also require adequate assurance that the person whom you state will provide the data is taking appropriate steps to secure it. The agreement to produce the data need not specify all of the terms of the final arrangement between the parties or a mechanism to resolve the terms.

If you and other registrants together are generating or submitting requested data as a task force or consortium, a representative of the group should request a Joint Data Submitter Number from the Registration Support and Emergency Response Branch, Registration Division. The request must include the following information:

- a. A list of the members of the consortium;
- b. The name and address of the designated representative of the consortium, with whom EPA will correspond concerning the data;
- c. Identity of the Registration Standard containing the data requirement;
- d. A list of the products affected (from all members of the consortium); and
- e. Identification of the specific data that the consortium will be generating or submitting.

The Agency will assign a number to the consortium, which should be used on all data submissions by the consortium.

3. You have attempted to enter into an agreement to jointly develop data, but no other registrant has accepted your offer. You request that EPA not suspend your registration for non-compliance with the DCI. EPA has determined that, as a general policy, it will not suspend the registration of a product when the registrant has in good faith sought and continues to seek to enter into a data development/cost sharing program, but the other registrants developing the data have refused to accept its offer. [If your offer is accepted, you may qualify for Option 2 above by entering into an agreement to supply the data.]

In order to qualify for this method, you must:

1. File with EPA a completed "Certification of Attempt to Enter into an Agreement with other Registrants for Development of Data" (EPA Form 8580-6, enclosed).
2. Provide us with a copy of your offer to the other

registrant and proof of the other registrant's receipt of your offer (such as a certified mail receipt). Your offer must, at a minimum, contain the following language or its equivalent:

[Your company name] offers to share in the burden of producing the data required pursuant to FIFRA sec. 3(c)(2)(B) in the [name of active ingredient] Registration Standard upon terms to be agreed or failing agreement to be bound by binding arbitration as provided by FIFRA section 3(c)(2)(B)(iii).

The remainder of your offer may not in any way attempt to limit this commitment. If the other registrant to whom your offer is made does not accept your offer, and if the other registrant informs us on a DCI Summary Sheet that he will develop and submit the data required under the DCI, then you may qualify for this option. In order for you to avoid suspension under this method, you may not later withdraw or limit your offer to share in the burden of developing the data.

In addition, the other registrant must fulfill its commitment to develop and submit the data as required by this Notice in a timely manner. If the other registrant fails to develop the data or for some other reason would be subject to suspension, your registration as well as that of the other registrant will normally be subject to initiation of suspension proceedings, unless you commit to submit and submit the required data in the specified timeframe. In such cases, the Agency generally will not grant a time extension for submitting the data.

4. You request a waiver of the data requirement. If you believe that a data requirement does not (or should not) apply to your product or its uses, you must provide EPA with a statement of the reasons why you believe this is so. Your statement must address the specific composition or use factors that lead you to believe that a requirement does not apply. Since the Agency has carefully considered the composition and uses of pesticide products in determining that a data requirement applies, EPA does not anticipate that many waivers will be granted. A request for waiver does not extend the timeframes for developing required data, and if your waiver request is denied, your registration may be suspended if you fail to submit the data.

5. You request that EPA amend your registration by deleting the uses for which the data are needed. You are not required to submit data for uses which are no longer on your label.

6. You request voluntary cancellation of the registration of your product(s) for which the data are needed.

E. Testing Protocols, Standards for Conducting Acceptable Tests, Guidance on Evaluating and Reporting Data.

All studies required under this Notice must be conducted in accordance with test standards outlined in the Pesticide Assessment Guidelines, unless other protocol or standards are approved for use by the Agency in writing.

As noted herein, these EPA Guidelines, which are referenced in the Data Tables, are available from the National Technical Information Service (NTIS), Attn: Order Desk, 5285 Port Royal Road, Springfield, VA 22161 (tel: 703-487-4650).

Protocols approved by the Organization for Economic Cooperation and Development (OECD) are also acceptable if the OECD-recommended test standards conform to those specified in the Pesticide Data Requirements regulation (Part 158.70). Please note, however, that certain OECD standards (such as test duration, selection of test species, and degradate identification which are environmental fate requirements) are less restrictive than those in the EPA Assessment Guidelines listed above. When using the OECD protocols, they should be modified as appropriate so that the data generated by the study will satisfy the requirements of Part 158. Normally, the Agency will not extend deadlines for complying with data requirements when the studies were not conducted in accord with acceptable standards. The OECD protocols are available from OECD, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006.

F. Procedures for requesting a change in testing protocol.

If you will generate the required data and plan to use test procedures which deviate from EPA's Pesticide Assessment Guidelines or the Reports of Expert Groups to the Chemicals Group, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must submit for EPA approval the protocols you propose to use.

You should submit your protocols before beginning testing, because the Agency will not ordinarily accept as sufficient studies using unapproved protocols. A request for protocol approval will not extend the timeframe for submission of the data, nor will extensions generally be given to conduct studies due to submittal of inappropriate protocols.

G. Procedures for requesting extensions of time.

If you think that you will need more time to generate the data than is allowed by EPA's schedule, you may submit a request for an extension of time. Any request for a time

extension which is made as an initial response to a section 3(c)(2)(B) request notice must be submitted in writing to the Product Manager listed at the end of this section and must be made by the 90-day deadline for response. Once dates have been committed to and EPA has accepted these commitments, any subsequent requests for a time extension must be submitted in writing to the Office of Compliance Monitoring at the address given in Section IX.E.

EPA will view failure to request an extension before the data submission response deadline as a waiver of any future claim that there was insufficient time to submit the data. While EPA considers your request, you must strive to meet the deadline for submitting the data.

The extension request should state the reasons why you believe that an extension is necessary and the steps you have taken to meet the testing deadline. Time extensions normally will not be granted due to problems with laboratory capacity or adequacy of funding, since the Agency believes that with proper planning these can be overcome.

A request for an extension does not extend the timeframe for submission of the data. If EPA denies your request for a time extension and you do not submit the data as requested, EPA may begin proceedings to suspend the registrations of your products.

H. PR Notice 86-5 and Any Other Requirements Referenced or Included Within this Notice.

All data submitted in response to this Notice must comply with EPA requirements regarding the reporting of data, including the manner of reporting, the completeness of results, and the adequacy of any required supporting (or raw) data, including, but not limited to, requirements referenced or included in this Notice or contained in PR Notice 86-5 (issued July 29, 1986).

I. Existing stocks provision upon suspension or cancellation.

The Agency has determined that if a registration is suspended for failure to respond to a DCI request under FIFRA sec. 3(c)(2)(B), an existing stocks provision is not consistent with the Act. Accordingly, the Agency does not anticipate granting permission to sell or distribute existing stocks of suspended product except in rare circumstances. If you believe that your product will be suspended or cancelled and that an existing stocks provision should be granted, you have the burden of clearly demonstrating to EPA that granting

such permission would be consistent with the Act. The following information must be included in any request for an existing stocks provision:

1. Explanation of why an existing stocks provision is necessary, including a statement of the quantity of existing stocks and your estimate of the time required for their sale or distribution; and
2. Demonstration that such a provision would be consistent with the provisions of FIFRA.

VII. REQUIREMENT FOR SUBMISSION OF PRODUCT-SPECIFIC DATA

Under its DCI authority, EPA has determined that certain product-specific data are required to maintain your registrations in effect. Product-specific data are derived from testing using a specific formulated product, and, unlike generic data, generally support only the registration of that product. All such data must be submitted by the dates specified in this Registration Standard.

If you have a manufacturing use product, these data are listed in Table B. If you have an end use product, the data are listed in Table C. As noted earlier, the Agency has decided that it will not routinely require product-specific data for end use products at this time. Therefore, Table C may not be contained in this Registration Standard; if there is no Table C, you are not required to submit the data at this time.

In order to comply with the product specific data requirements, you must follow the same procedures as for generic data. See Section VI.D, E, F, and G. You should note, however, that product chemistry data are required for every product, and the only acceptable responses are options VI.D.1. (submit data) or VI.D.6.(cancellation of registration).

Failure to comply with the product-specific data requirements for your products will result in suspension of the product's registration.

VIII. REQUIREMENT FOR SUBMISSION OF REVISED LABELING

FIFRA requires each product to be labeled with accurate, complete and sufficient instructions and precautions, reflecting the Agency's assessment of the data supporting the product and its uses. General labeling requirements are set out in 40 CFR 162.10 (see Appendix II - LABELING and SUMMARY). In addition, labeling requirements specific to products containing this pesticide are specified in Section IV.D of this Registration Standard. Applications submitted in response to this notice must include draft labeling for Agency review.

If you fail to submit revised labeling as required, which complies with 40 CFR 162.10 and the specific instructions in Section IV.D., EPA may seek to cancel or suspend the registration of your product under FIFRA sec. 6.

IX. INSTRUCTIONS FOR SUBMISSION

A. Manufacturing Use Products (MUPs) containing the subject pesticide as sole active ingredient.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division for each product subject to this Registration Standard:

a. The "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1), with appropriate attachments.⁵

b. Confidential Statement of Formula (EPA Form 8570-4).

c. Generic Data Exemption Statement (EPA Form 8570-27), if applicable.

d. Evidence of compliance with data compensation requirements of FIFRA sec. 3(c)(1)(D). Refer to 40 CFR 152.80-152.99. Refer to Certification With Respect to Citation of Data Form.

⁵ If on the Summary Sheet, you commit to develop the data, present arguments that a data requirement is not applicable or should be waived, or submit protocols or modified protocols for Agency review, you must submit a copy of the Summary Sheet (and any supporting information) to the Office of Compliance Monitoring, which will be monitoring the data generated in response to this notice. This submission is in addition to responding to the Product Manager, and should be submitted to the Office of Compliance Monitoring at the address given at the end of this section. (Actual studies are not to be submitted to the Office of Compliance Monitoring.)

2. Within 9 months from receipt of this document you must submit to the Product Manager:

a. Application for Pesticide Registration (EPA Form 8570-1).

b. Two copies of any required product-specific data (See Table B).

c. Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft label must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text.

d. Product Specific Data Report (EPA Form 8580-4).

3. Within the times set forth in Table A, you must submit to the Registration Division all generic data, unless you are eligible for the formulator's exemption. If for any reason any test is delayed or aborted so that the schedule cannot be met, immediately notify the Product Manager and the Office of Compliance Monitoring of the problem, the reasons for the problem, and your proposed course of action.

B. Manufacturing Use Products containing the subject pesticide in combination with other active ingredients.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division:

a. FIFRA sec. 3(c)(2)(B) Summary Sheet, with appropriate attachments⁵ (EPA Form 8580-1).

b. Confidential Statement of Formula (EPA Form 8570-4)

c. Generic Data Exemption Statement (EPA Form 8570-27), if applicable.

2. Within 9 months of receipt of this document, you must submit to the Product Manager:

Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft label must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text.

3. Within the time frames set forth in Table A, you must submit to the Registration Division all generic data, unless you are eligible for the formulator's exemption. If for any reason any test is delayed or aborted so that the schedule cannot be met, immediately notify the Product Manager and the Office of Compliance Monitoring of the problem, the reasons for the problem, and your proposed course of action.

C. End Use Products containing the subject pesticide as sole active ingredient.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division:

a. Formulator's Exemption Statement (EPA Form 8570-27), if applicable.

2. Within 9 months from receipt of this document you must submit to the Product Manager:

a. Two copies of any product-specific data, if required by Table C.

b. Product Specific Data Report (EPA Form 8580-4), if Table C lists required product-specific data.

c. Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft labeling must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text. End use product labeling must comply specifically with the instructions in Section IV (Regulatory Position and Rationale).

D. End Use Products containing the subject active ingredient as one of multiple active ingredients

Within 9 months from the receipt of this document, you must submit to the Product Manager:

Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft labeling must indicate the intended colors of the final label, clear indication

of the front panel of the label, and the intended type sizes of the text. End use product labeling must comply specifically with the instructions in Section IV (Regulatory Position and Rationale).

- E. Intrastate Products containing the subject pesticide either as sole active ingredient or in combination with other active ingredients.

Applications for full Federal registration of intrastate products are required to be submitted no later than July 31, 1988.

F. Addresses

The required information must be submitted to the following address:

William H. Miller (PM-16)
Registration Division (TS-767C)
Office of Pesticide Programs
Environmental Protection Agency
401 M St., SW
Washington, D.C. 20460

The address for submissions to the Office of Compliance Monitoring is:

Laboratory Data Integrity Program
Office of Compliance Monitoring (EN-342)
Environmental Protection Agency
401 M St., SW
Washington, D.C. 20460.

I. DATA APPENDICES

TGUIDE-1

GUIDE TO TABLES

Tables A, B, and C contain listings of data requirements for the pesticides covered by this Registration Standard.

Table A contains generic data requirements that apply to the pesticide in all products, including data requirements for which a "typical formulation" is the test substance.

Table B contains product-specific data requirements that apply only to a manufacturing use product.

Table C contains product-specific data requirements that apply only to an end use product.

The data tables are generally organized according to the following format:

1. Data Requirement (Column 1). The data requirements are listed in the order in which they appear in 40 CFR Part 158. The reference numbers accompanying each test refer to the test protocols set out in the Pesticide Assessment Guidelines, which are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.
2. Test Substance (Column 2). This column lists the composition of the test substance required to be used for the test, as follows:

TGAI = Technical grade of the active ingredient
PAI = Pure active ingredient
PAIRA = Pure active ingredient, radio labeled
TEP = Typical end use formulation
MP = Manufacturing use product
EP = End use product

Any other test substances, such as metabolites, will be specifically named in Column 2 or in footnotes to the table.

3. Use pattern (Column 3). This column indicates the use patterns to which the data requirement applies. Use patterns are the same as those given in 40 CFR Part 158. The following letter designations are used for the given use patterns:

A = Terrestrial, food
B = Terrestrial, non-food
C = Aquatic, food
D = Aquatic, non-food
E = Greenhouse, food
F = Greenhouse, non-food
G = Forestry
H = Domestic outdoor
I = Indoor
N/A = There are no registered use patterns for which the data requirement applies.

TGUIDE-2

4. Does EPA have data? (Column 4). This column indicates one of three answers:

YES - EPA has data in its files that completely satisfy this data requirement. These data may be cited by other registrants in accordance with data compensation requirements of Part 152, Subpart E.

PARTIALLY - EPA has some data in its files, but such data do not fully satisfy the data requirement. In some cases, the Agency may possess data on one of two required species, or may possess data on one test substance but not all. The term may also indicate that the data available to EPA are incomplete. In this case, when the data are clarified, or additional details of the testing submitted by the original data submitter, the data may be determined to be acceptable. If this is the case, a footnote to the table will usually say so.

NO - EPA either possesses no data which are sufficient to fulfill the data requirement, or the data which EPA does possess are flawed scientifically in a manner that cannot be remedied by clarification or additional information.

5. Bibliographic citation (Column 5). If the Agency has acceptable data in its files, this column lists the identifying number of each study. This normally is the Master Record Identification (MRID) number, but may be a GS number if no MRID number has been assigned. Refer to the Bibliography Appendices for a complete citation of the study.

6. Must additional data be submitted? (Column 6). This column indicates whether the data must be submitted to the Agency. If column 3 indicates that the Agency already has data, this column will usually indicate NO. If column 3 indicates that the Agency has only partial data or no data, this column will usually indicate YES. In some cases, even though the Agency does not have the data, EPA will not require its submission because of the unique characteristics of the chemical; because data on another chemical can be used to fulfill the data requirement; or because the data requirement has been waived or reserved. Any such unusual situations will be explained in a footnote to the table.

7. Timeframe for submission (Column 7). If column 5 requires that data be submitted, this column indicates when the data are to be submitted, based on the issuance date of the Registration Standard. The timeframes are those established either as a result of a previous Data Call-In letter, or standardized timeframes established by PR Notice 85-5 (August 22, 1985).

8. Footnotes (at the end of each table). Self-explanatory.

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data? ^{1/}	Bibliographic Citation ^{1/}	Must Additional Data be Submitted?	Timeframe for Submission ^{2/}
<u>§158.120 Product Chemistry</u>						
<u>Product Identity:</u>						
61-1 - Product Identity and Disclosure of Ingredients	TGAI	All			Yes	9 Months
61-2 - Description of Beginning Materials and Manufacturing Process	TGAI	All			Yes	9 Months
61-3 - Discussion of Formation of Impurities	TGAI	All			Yes	9 Months
<u>Analysis and Certification of Product Ingredients:</u>						
62-1 - Preliminary Analysis	TGAI	All			Yes	12 Months
62-2 - Certification of Limits	TGAI	All			Yes	12 Months
62-3 - Analytical Methods to Verify Certified Limits	TGAI	All			* Yes	12 Months
<u>Physical and Chemical Characteristics:</u>						
63-2 - Color	TGAI	All			Yes	9 Months
63-3 - Physical State	TGAI	All			Yes	9 Months

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data? ^{1/}	Bibliographic Citation ^{1/}	Must Additional Data be Submitted?	Timeframe for Submission ^{2/}
\$158.120 Product Chemistry (cont'd)						
<u>Physical and Chemical Characteristics:</u> (cont'd)						
63-4 - Odor	TGAI	ALL			Yes	9 Months
63-5 - Melting Point	TGAI	ALL			Yes ^{3/}	9 Months
63-6 - Boiling Point	TGAI	ALL			Yes ^{4/}	9 Months
63-7 - Density, Bulk Density, or Specific Gravity	TGAI	ALL			Yes	9 Months
63-8 - Solubility	TGAI or PAI	ALL			Yes	9 Months
63-9 - Vapor Pressure	TGAI or PAI	ALL			Yes	9 Months
63-10 - Dissociation Constant	TGAI or PAI	ALL			Yes	9 Months
63-11 - Octanol/Water Partition Coefficient	PAI	ALL			Yes	9 Months
63-12 - pH	TGAI	ALL			Yes	9 Months
63-13 - Stability	TGAI	ALL			Yes	9 Months
<u>Other Requirements:</u>						
64-1 - Submittal of Samples	TGAI, PAI	ALL			Reserved ^{5/}	

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
<u>Pome Fruits Group</u>				
Apples	8.0	2.0	8.0	2.0
Pears	8.0	2.0	8.0	0.5
Quinces	8.0	-	-	-
<u>Stone Fruits Group</u>				
Apricots	8.0	8.0	-	-
Cherries	8.0	6.0	-	6.0
Nectarines	8.0	-	-	-
Peaches	8.0	6.0	8.0	6.0
Plums (fresh prunes)	8.0	8.0	-	6.0
<u>Small Fruits and Berries Group</u>				
Blackberries	8.0	8.0	-	8.0
Blueberries	8.0	8.0	-	0.5
Boysenberries	8.0	8.0	-	-
Cranberries	8.0	8.0	-	-
Currants	8.0	8.0	-	-
Dewberries	8.0	8.0	-	-
Grapes	8.0	8.0	8.0	8.0
Gooseberries	8.0	8.0	-	-
Loganberries	8.0	8.0	-	-
Raspberries	8.0	8.0	-	8.0
Strawberries	8.0	8.0	8.0	1.0
<u>Tree Nuts Group</u>				
Almonds	8.0 (almonds) 50.0 (hulls) 50.0 (shells)	-	8.0 8.0	8.0 8.0
Chestnuts	1.0	-	8.0	8.0
Filberts	1.0	-	8.0	8.0
Macadamia nuts	1.0	-	8.0	8.0
Pecans	8.0	8.0	8.0	8.0
Walnuts	8.0	-	8.0	8.0
<u>Cereal Grains Group</u>				
Barley	8.0	8.0	-	8.0
Corn (field and fresh)	2.0 (fresh corn) 8.0 (corn grain)	8.0	2.0 (corn) 8.0 (corn)	8.0 8.0
Oats	8.0	8.0	-	8.0

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
Rice	8.0	8.0	8.0	8.0
Rye	8.0	2.0	-	8.0
Sorghum	8.0	8.0	-	8.0
Wild rice	8.0	8.0	-	8.0
Wheat	8.0	8.0	8.0	8.0
<u>Forage, Fodder, and Straw of Cereal Grains Group</u>				
Sorghum forage and fodder	8.0	0.1(N) <u>5</u> /	8.0	-
<u>Grass Forage, Fodder, and Hay Group</u>				
Grass forage	135.0	0.1(N) <u>5</u> /	-	-
Grass hay	135.0	0.1(N) <u>5</u> /	-	-
<u>Non-Grass Animal Feeds (Forage, Fodder, Straw, and Hay) Group</u>				
Alfalfa forage and hay	135.0	0.1(N) <u>5</u> /	135.0	-
Birdsfoot trefoil forage and hay	135.0	0.1(N) <u>5</u> /	-	-
Clover forage and hay	135.0	0.1(N) <u>5</u> /	-	-
Lespedeza forage and hay	8.0 (seed) 135.0 (hay & straw)	0.1(N) <u>5</u> /	-	-
Lupine forage and hay	135.0	0.1(N) <u>5</u> /	-	-
Vetch forage and hay	8.0 (seed) 135.0 (hay & straw)	0.1(N) <u>5</u> /	-	-
<u>Miscellaneous Commodities</u>				
Asparagus	8.0	6.0	8.0	-
Avocados	8.0	8.0	8.0	-
Citrus Pulp	50.0	-	50.0	-
Cottonseed	2.0	-	2.0	-
Dates	8.0	-	-	-
Figs	8.0	-	8.0	8.0
Flax	0.1 (seed) 1.0 (straw)	0.1(N) <u>5</u> /	-	-
Guavas	8.0	-	8.0	-
Hops	1.0	-	-	-
Mangoes	8.0	-	8.0	-
Mint	8.0	-	-	-

SUMMARY OF TOLERANCES FOR MALATHION (cont'd) (ppm)

<u>Commodity</u>	<u>U.S.</u>	<u>Canadian</u>	<u>Mexican</u>	<u>International Codex MRL</u>
Mushrooms	8.0	-	-	-
Non-medicated cattle feed conc. blocks	10.0	-	-	-
Okra	8.0	3.0	8.0	-
Papayas	1.0	8.0	1.0	-
Passion fruit	8.0	-	-	-
Peanuts	8.0	-	8.0	-
Pineapples	8.0	8.0	8.0	-
Raisins	12.0	8.0	-	8.0
Safflower	0.2 (seed) 0.6 (oil)	-	0.2 (seed) 0.6 (oil)	-
Sunflower seeds	8.0	-	-	-
Watercress	8.0	6.0	-	-
Tobacco	N/A (non-food use)	N/A	N/A	N/A

Meat, Milk, Poultry, and Eggs

Cattle, fat	4.0	-	-	-
Cattle, meat	4.0	-	-	-
Cattle, meat by-product	4.0	-	-	-
Goats, fat	4.0	-	-	-

Meat, Milk, Poultry, and Eggs

Goats, meat	4.0	-	-	-
Goats, Meat	4.0	-	-	-
by-products				
Hogs, fat	4.0	-	-	-
Hogs, meat	4.0	-	-	-
Hogs, meat by-products	4.0	-	-	-
Horses, fat	4.0	-	-	-
Horses, meat	4.0	-	-	-
Horses, meat by-product	4.0	-	-	-
Sheep, fat	4.0	-	-	-
Sheep, meat	4.0	-	-	-
Sheep, meat by-products	4.0	-	-	-
Milk	0.5	-	-	-
Poultry, fat	4.0	-	-	-
Poultry, meat	4.0	-	-	-
Poultry, meat by-products	4.0	-	-	-
Eggs	0.1	-	-	-

2. Residue Data The residue data reviewed in support of the malathion tolerances may be summarized as follows:

a. The available data pertaining to metabolism of malathion in plants are inadequate. The data consists solely of information on fortified wheat grain. Additional data are required on the uptake, distribution, and metabolism of malathion in alfalfa, cotton, soybeans, and either wheat or rice following foliar applications at a rate sufficiently high to permit residue identification.

The data pertaining to metabolism of malathion in animals are inadequate. Additional metabolism studies are required that utilize ruminants and poultry. Should the metabolism of malathion in ruminants and/or poultry following oral dosing differ significantly from that in rats, swine metabolism data may also be required. Metabolism studies using cattle, poultry, and swine reflecting direct animal treatment are also required.

b. Analytical methodology for determining the levels of residues of malathion in plants and animals is adequate. Malathion is detected by the FDA-USDA multiresidue protocols. Additional methods may be required if the metabolism studies indicate that additional metabolites constitute residues of toxicological concern.

c. Storage stability data demonstrate that residues of malathion in or on frozen plant commodities are stable up to 185 days after application and in milk stored at -10°C for 98 days after application. No data are presently available for animal tissues and are required. Additional storage stability data are also required in order to evaluate the adequacy of the malathion tolerances.

d. Insufficient data are available on the magnitude and levels of and residues of malathion in all the listed crops except flax seed, hops, wild rice, and non-medicated cattle feed concentrate blocks.

e. Processing studies are required for potatoes, sugar beets, soybeans, tomatoes, oranges, apples, plums, grapes, corn, rice, sorghum, wheat, cottonseed, mint, figs, flax, peanuts, pineapples, safflower seed, sunflower, almonds, citrus pulp, and raisins.

f. Tolerances must be proposed and appropriate supporting residue data submitted for the following feed items: bean vines and hay; lentil forage and hay; cowpea seed; soybean straw;

barley forage, hay, and straw; corn forage and fodder; oat forage, hay, and straw; rice straw; rye forage and straw; straw of wild rice; sorghum fodder; lespedeza forage; lupine forage; cotton forage; mint hay; peanut hulls, hay, and vines; and pineapple forage.

g. Feed additive tolerances are required for residues of malathion in or on dried hops and spent hops.

h. A tolerance for residues of malathion in or on anise must be proposed and submitted along with appropriate supporting residue data.

i. Data are needed to support the use of malathion in food handling establishments.

j. Data reflecting the use of malathion on stored, unfinished tobacco are required.

k. A tolerance must be proposed and appropriate supporting residue data submitted for grain dust from corn, wheat, rice, soybeans and sorghum.

l. The FDA Revised Total Diet studies as well as the Surveillance and Compliance program for domestic and imported commodities employ methodology which is known to determine malathion. No tolerance exceeding residues of malathion were observed in the Total Diet studies (4/82 to 4/86) although residues were observed in the following commodities for which no tolerances exist: cooked fish (0.0005 ppm), fried breaded shrimp (0.004 ppm), fish sticks (0.008 ppm) and pudding (0.005 ppm). Positive findings of malathion were observed in various commodities of malathion in the Surveillance and Compliance program (FY 78 through 6/8/87). The USDA monitoring program for meat utilized methodology known to be capable of determining malathion. Residues within the tolerance of malathion were observed in one sample of steer liver analyzed in 1973. No other findings were reported in samples analyzed from 1972 to 1985.

m. The following changes to 40 CFR 180.111 will be proposed by the Agency:

<u>Current 40 CFR entry</u>	<u>Appropriate commodity definitions</u>
Beets (including tops)	Beet roots Beet greens
Salsify (including tops)	Salsify Salsify tops
Turnips (including tops)	Turnips

Onions (including onion greens)	Turnip tops
Plums	Onions (green and bulb)
Prunes	Plums (fresh prunes)
Almonds, shells	None ^a
Alfalfa	None ^a
Clover	Alfalfa forage
Lespedeza seed	Clover forage
Lespedeza straw	None ^a
Lupine straw	None ^a
Vetch seed	None ^a
Vetch straw	None ^a

^a Deletion from the 40 CFR recommended; not a raw agricultural commodity.

3. Toxicology

Based on a study in man in which red blood cell and plasma cholinesterase activity was inhibited at a dose of 0.34 mg/kg (the lowest effect level or LEL), a provisional acceptable daily intake (PADI) of 0.02 mg/kg/day has been calculated using a 10-fold uncertainty factor (UF). A No Observable Effect Level (NOEL) was calculated to be 16 mg/day. The PADI is provisional because the existing data base on malathion is lacking chronic toxicity studies, a teratology study, a reproduction study, mutagenicity studies, and a metabolism study.

The Theoretical Maximum Residue Contribution (TMRC) for the U.S. population average is 0.1014 mg/kg/day, occupying 507% of the PADI. For children 1 to 6 years of age, the TMRC occupies 1133% of the PADI. The TMRC is based upon current tolerance levels and an assumption that 100% of the sites are treated. Actual dietary exposure may be much lower. The Agency is not able to calculate an Anticipated Residue Contribution (ARC), which is a much more realistic estimate of dietary exposure, since no processing or anticipated residue data were available. When the required data are submitted, the Agency will conduct a full tolerance reassessment.

IV. REGULATORY POSITIONS AND RATIONALES

A. REGULATORY POSITIONS AND RATIONALES

Based on review and evaluation of all available data and other relevant information on malathion the Agency has made the following determinations:

1. Malathion is not being placed into Special Review at this time.

Rationale: Since available data are limited, the Agency is not yet able to make a determination as to whether any of the criteria specified in 40 CFR 154.7 have been met or exceeded.

2. The Agency will not approve tolerances for significant new uses until the Agency has received data sufficient to perform a tolerance reassessment.

Rationale: Data gaps exist for plant and animal metabolism, storage stability and residues in most of the raw agricultural commodities (RAC's). Data gaps exist in the area of toxicology testing (chronic feeding, oncogenicity, teratology, reproduction, mutagenicity, and metabolism). This lack of data precludes the Agency from conducting a full tolerance assessment. In addition, the TMRC occupies 507% of the PADI. For these reasons, significant new uses^{6/} will not be granted until these data gaps have been filled.

3. The Agency is concerned about the potential hazards to aquatic organisms, but is not taking any regulatory action at this time for fish and wildlife concerns.

Rationale: Based on theoretical calculations, both terrestrial and aquatic uses of malathion may pose significant risk to aquatic fauna. Reported fish kills and results of several field studies suggest that adverse effects to both terrestrial and aquatic fauna may result from normal use of malathion. However, these reports are not adequately documented to cause EPA to impose restricted use status for malathion. EPA will reassess the impacts of malathion use to nontarget organisms after the required ecological effects and environmental fate data required by this Standard have been received and reviewed. The Agency will then determine whether any regulatory action is necessary.

^{6/} "Significant new use" is defined in 44 FR 27934, May 1, 1979.

In the case of a new food or feed use, the Agency will generally consider as significant an increase in the Theoretical Maximum Residue Contribution (TMRC) of greater than 1%.

4. The Agency is not restricting the use of malathion products at this time.

Rationale: Section 3(d)(1)(C) of FIFRA provides that, some or all uses of a pesticide will be classified for restricted use if the Administrator determines that without such restriction the pesticide "may generally cause unreasonable adverse effects in man or the environment." The Agency has determined that malathion does not meet any of the risk criteria of 40 CFR 162.11, and therefore products containing malathion do not warrant restricted use classification.

5. The Office of Endangered Species (OES) in the U.S. Fish and Wildlife Service has determined that certain uses of malathion, including uses on range and pastureland, on grain crops, soybeans, sorghum and cotton, may jeopardize the continued existence of endangered species. EPA is developing a program to reduce or eliminate exposure to these species to a point where use does not result in jeopardy, and will issue notice of any necessary labeling revisions when the program is developed. No additional labeling is required at this time. Labeling requirements issued in PR Notices 87-4 and 87-5 have been withdrawn pending reissuance.

In addition, the Agency is seeking OES evaluation of additional uses of malathion, including mosquito larvicide, forestry, stone fruits, citrus, apples, pears, blueberries, cucumber, peanuts, pineapple, potatoes, tomatoes and celery.

Rationale: Technical malathion is potentially highly toxic to aquatic invertebrates, aquatic life stages of amphibians and terrestrial non-target insects including bees.

In May 1987, EPA issued PR Notices 87-4 and 87-5 in response to OES findings that certain pesticides, including malathion, jeopardized the continued existence of endangered species. Those PR Notices directed registrants to add labeling to their products which referred users to additional information that, in turn, explained limitations on use of malathion within the range of jeopardized endangered species.

Subsequent to issuance of these PR Notice, EPA identified a number of significant technical errors and inconsistencies in the information to which users would have been referred. Therefore, on January 26, 1988, the Agency issued PR Notice 88-1, which withdrew PR Notices 87-4 and 87-5 pending development of a more focused program to protect endangered species. EPA is working to correct these errors prior to requiring labeling to protect endangered species. When that program is fully developed, notice of any labeling necessary to protect endangered species will be issued.

6. In order to meet the statutory standard for continued registration, the Agency has determined that malathion products must bear revised and updated fish and wildlife toxicity warnings. Specific wording is given in Section IV.D.

Rationale: Available data indicate that malathion is potentially highly toxic to aquatic invertebrates, aquatic life stages of amphibians and bees, moderately toxic to birds, and slightly toxic to fish.

7. The Agency is deferring decisions concerning malathion's potential for contaminating groundwater until information on its environmental characteristics and fate have been submitted and reviewed.

Rationale: The Agency is unable to assess the potential for malathion to contaminate groundwater because the environmental fate of this chemical is largely uncharacterized. Preliminary data indicate that malathion is very mobile in loamy sand and loam soils. Additional data are needed in order for the Agency to assess its potential for contaminating groundwater. When these data have been received and evaluated, The Agency will assess malathion's potential for groundwater contamination and will determine whether any regulatory action is necessary.

8. The Agency is not establishing a longer reentry interval for agricultural uses of malathion beyond the minimum reentry interval (sprays have dried, dusts have settled and vapors have dispersed).

Rationale: Malathion has a relatively low acute toxicity (Toxicity Category III by the oral, dermal and inhalation routes of exposure). There have been no scientifically validated toxicological evidence showing that malathion causes adverse effects to persons entering treated areas. For these reasons, the Agency has determined that a longer reentry interval beyond the minimum established reentry (sprays have dried, dusts have settled and vapors have dispersed) is not necessary for this chemical. Upon receipt and evaluation of the toxicology data requested in this Standard, the Agency will reevaluate its position regarding the need for reentry data/reentry intervals.

9. Pesticide spray drift data requirements are imposed for the outdoor uses of malathion. Data required are droplet size spectrum and field evaluation studies.

Rationale: The Agency is concerned about the potential hazards to nontarget organisms (fish and wildlife, domestic animals and humans) caused by the drift from aerial and ground applications of malathion. These data requirements are imposed because of malathion's volatility and its ability to persist in air, and because pesticide incident data show that spray drift is a principal source of poisoning risk for humans from this chemical.

10. In order to remain in compliance with FIFRA, all malathion products intended for use indoors must bear precautions to use with adequate ventilation and to ventilate thoroughly before occupying enclosed spaces.

Rationale: The Agency has determined that a labeling precaution to use with adequate ventilation and to ventilate thoroughly before occupying enclosed spaces is necessary. This is due to a relatively high number of pesticide incidents reported for this chemical. Malathion was the third most common cause of pesticide illness in California between 1981 and 1985. Twenty-eight percent of the illnesses reported were attributed to exposure to fumes, especially from indoor application (1982-1986 data).

11. The Agency will revise the commodity definitions for certain raw agricultural commodities listed in 40 CFR 180.111 when tolerances for malathion are next revised.

Rationale: Certain listings in 40 CFR 180.111 are not appropriate and will be corrected by the Agency when tolerances for malathion are next revised (e.g. the tolerance listing for beets (including tops) will be revised to enumerate beet roots and beet greens separately.

12. The Agency has identified certain data that will receive priority review when submitted to the Agency.

Rationale: Certain data are essential to the Agency's assessment of this pesticide and its uses and/or may trigger the need for further studies which should be initiated as soon as possible. The following studies have been identified to receive priority review as soon as they are received by the Agency:

§158.135 Toxicology

81-7	Delayed Neurotoxicity
82-2	21-Day Dermal Toxicity
82-4	90-Day Inhalation

§158.125 Environmental Fate

161-1	Hydrolysis
161-2	Photodegradation in Water
161-3	Photodegradation in Soil
162-1	Aerobic Soil Metabolism
162-2	Anaerobic Soil Metabolism
163-1	Leaching and Adsorption/Desorption
164-1	Terrestrial Field Dissipation
201-1	Droplet Size Spectrum and Drift Field Evaluation

§158.145 Wildlife and Aquatic Organisms

- 72-2 Acute Toxicity to Freshwater Invertebrates (TEP)
- 72-3 Acute Toxicity to Estuarine and Marine Organisms (TGAI and TEP)
- 72-4 Fish Early Life Stage and Aquatic Invertebrate Life Cycle

§158.125 Residue Chemistry

- 171-4 Plant and Animal Metabolism Data
- 171-4 Storage Stability Data
- 171-4 Residue Data

13. While data gaps are being filled, currently registered manufacturing-use products (MPs) and end-use products (EPs) containing malathion may be sold, distributed, formulated, and used, subject to the terms and conditions specified in this Standard. However, significant new uses will not be registered. Registrants must provide or agree to develop additional data, as specified in the Data Appendices, in order to maintain existing registrations.

Rationale: Even when authorized under FIFRA sections 3(c)(2)(B) and 3(c)(7) the Agency may elect not to cancel or withhold registration even though data are missing or are inadequate. Issuance of this Standard provides a mechanism for identifying data needs. These data will be reviewed and evaluated, after which the Agency will determine if additional regulatory actions are necessary. The Agency has elected not to consider registration of any significant new uses while data gaps are being filled and data evaluated.

B. CRITERIA FOR REGISTRATION

To be registered or reregistered under this Standard, MPs must contain malathion as the sole active ingredient. Registrants must comply with all terms and conditions described in this section, including submission of an up-to-date Confidential Statement of Formula, submission of revised labeling, commitment to fill data gaps on the schedule specified by the Agency and, when applicable, offer to pay compensation as required by FIFRA sections 3(c)(1)(D) and 3(c)(2)(D).

C. ACCEPTABLE RANGES AND LIMITS

1. Product Composition Standard

Each MP proposed for registration or reregistration must be fully described with an appropriate certification of limits, stating maximum and minimum amounts of the active and intentionally added inert ingredients which are present in the product, as well as impurities found at greater than 0.1 percent.

2. Acute Toxicity Limits

The Agency will consider registration of MPs containing malathion in any Toxicity Category provided the product labeling bears appropriate precautionary statements for the acute toxicity category in which each product is placed.

3. Use Patterns

All MPs must be labeled for formulation into other MP products or into end use products bearing federally registered uses. Labeling must specify sites, which are listed in Use Patterns, Appendix III. However, no use may be included on the label where the registrant fails to agree to comply with the data requirement in Table A for that use pattern.

D. REQUIRED LABELING

All MPs and EPs must bear appropriate labeling as specified in 40 CFR 162.10, PR Notices 83-2 and 83-3, precautions and warnings listed in the Malathion Use index (Appendix III), and as indicated in this Registration Standard (as appropriate).

In order to remain in compliance with FIFRA, no EP or MP containing malathion may be released for shipment by a registrant or producer of that product after March 31, 1989, unless the product complies with these requirements.

In order to remain in compliance with FIFRA, no EP or MP containing malathion may be distributed, sold, offered for sale, held for sale, shipped, delivered for shipment, or received and (having been so received) delivered or offered to be delivered by any person after March 31, 1990, unless the product bears a label which complies with the requirements listed above.

1. Labeling for MPs

a. The ingredient statement for MPs must declare the active ingredient as:

Malathion: O,O-diethyl phosphorodithioate of
diethyl mercaptosuccinate

b. Labels for MPs must bear the following identifying phrase directly beneath the product name:

"An insecticide and miticide for formulating use only."

c. In the directions for use, the following statement must appear:

"Formulators using this product are responsible for obtaining EPA registration of their formulated products."

d. In the directions for use, the following statement regarding acceptable use patterns must appear:

"For formulation into end-use insecticide products intended only for (list acceptable sites)."

NOTE: No use may be included on the label where the registrant fails to agree to comply with the data requirements for that use pattern.

e. If detailed instructions for formulating are not provided on the label, the following statement must appear:

"Refer to attached Technical Bulletin for formulating and other information."

NOTE: The technical bulletin must be submitted with the product label for Agency review.

f. The following fish and wildlife statements are required to appear under the "Environmental Hazards" heading:

This pesticide is toxic to aquatic invertebrates and aquatic life stages of amphibians. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public waters unless this product is specifically identified and addressed in a National Pollution Discharge Elimination System (NPDES) permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or the Regional Office of EPA.

2. Labeling for EPs

a. The ingredient statement for EPs must declare the active ingredient as:

Malathion: 0,0-dimethyl phosphorodithioate of
diethyl mercaptosuccinate

b. All products allowing for outdoor use on nonaquatic sites must bear the following environmental hazards statement:

"This pesticide is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water or wetlands (i.e., swamps, bogs, marshes, and potholes). Drift and runoff may be hazardous to aquatic organisms in areas near the application site. Do not contaminate water when disposing of equipment washwaters."

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

c. All products allowing for use on aquatic sites must bear the following environmental hazards statement under the "Environmental Hazards" heading:

"This pesticide is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water except as specified on this label. Do not contaminate water when disposing of equipment washwaters."

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

d. All products allowing for indoor use must bear the following ventilation statement:

Use only with adequate ventilation. After using this product indoors, ventilate thoroughly before occupying enclosed spaces. Do not allow contact with treated surface until sprays have dried.

V. PRODUCTS SUBJECT TO THIS STANDARD

All products containing one or more of the pesticides identified in Section II.A. are subject to certain requirements for data submission or changes in composition, labeling or packaging of the product. The applicable requirements depend on whether the product is a manufacturing or end use product and whether the pesticide is the sole active ingredient or one of multiple active ingredients.

Products are subject to this Registration Standard as follows:

A. Manufacturing use products containing this pesticide as the sole active ingredient are subject to:

1. The restrictions (if any) upon use, composition, or packaging listed in Section IV, if they pertain to the manufacturing use product.
2. The data requirements listed in Tables A and B²
3. The labeling requirements specified for manufacturing use products in Section IV.
4. Administrative requirements (application forms, Confidential Statement of Formula, data compensation provisions) associated with reregistration.

² Data requirements are listed in the three Tables in Appendix I of this Registration Standard. The Guide to Tables in that Appendix explains how to read the Tables.

Table A lists generic data requirements applicable to all products containing the pesticide subject to this Registration Standard. Table B lists product-specific data applicable to manufacturing use products. The data in Tables A and B need not be submitted by a producer who is eligible for the formulator's exemption for that active ingredient.

Table C lists product-specific data applicable to end use products. The Agency has decided that, in most cases, it will not require the submission of product-specific data for end use products at this time. Therefore most Registration Standards do not contain a Table C.

B. Manufacturing use products containing this pesticide as one of multiple active ingredients are subject to:

1. The data requirements listed in Table A.
2. The labeling requirements specified for manufacturing use products in Section IV.

C. End use products containing this pesticide as the sole active ingredient are subject to:

1. The restrictions (if any) upon use, composition, or packaging listed in Section IV if they pertain to the end use product.
2. If eligible for the formulator's exemption³, the data requirements listed in Table C.
3. If not eligible for the formulator's exemption, the data requirements listed in Table A and the data requirements listed in Table C.
4. The labeling requirements specified for end use products in Section IV.

D. End use products containing this pesticide as one of multiple active ingredients are subject to:

1. If not eligible for the formulator's exemption, the data requirements listed in Tables A and C.

³ If you purchase from another producer and use as the source of your active ingredient only EPA-registered products, you are eligible for the formulator's exemption for generic data concerning that active ingredient (Table A) and product-specific data for the registered manufacturing use product you purchase (Table B).

Two circumstances nullify this exemption:

- 1) If you change sources of active ingredient to an unregistered product, formulate your own active ingredient, or acquire your active ingredient from a firm with ownership in common with yours, you individually lose the exemption and become subject to the data requirements in Table A.
- 2) If no producer subject to the generic data requirements in Table A agrees to submit the required data, all end use producers lose the exemption, and become subject to those data requirements.

2. If eligible for the formulator's exemption, the data requirements listed in Table C.

3. The labeling requirements specified for end use products in Section IV.

VI. REQUIREMENT FOR SUBMISSION OF GENERIC DATA

This portion of the Registration Standard is a notice issued under the authority of FIFRA sec. 3(c)(2)(B). It refers to the data listed in Table A, which are required to be submitted by registrants to maintain in effect the registration of products containing this active ingredient.⁴

A. What are generic data?

Generic data pertain to the properties or effects of a particular active ingredient. Such data are relevant to an evaluation of all products containing that active ingredient regardless of whether the product contains other ingredients (unless the product bears labeling that would make the data requirement inapplicable).

Generic data may also be data on a "typical formulation" of a product. "Typical formulation" testing is often required for ecological effects studies and applies to all products having that formulation type. These are classed as generic data, and are contained in Table A.

B. Who must submit generic data?

All current registrants are responsible for submitting generic data in response to a data request under FIFRA sec. 3(c)(2)(B) (DCI Notice). EPA has decided, however, not to require a registrant who qualifies for the formulator's exemption (FIFRA sec. 3(c)(2)(D) and § 152.85) to submit generic data in response to a DCI notice if the registrant who supplies the active ingredient in his product is complying with the data request.

If you are granted a generic data exemption, you rely on the efforts of other persons to provide the Agency with the required data. If the registrants who have committed to generate and submit the required data fail to take appropriate steps to meet the requirements or are no longer in compliance with this data requirements notice, the Agency will consider

⁴ Registrations granted after issuance of this Standard will be conditioned upon submission or citation of the data listed in this Registration Standard.

that both they and you are not in compliance and will normally initiate proceedings to suspend the registrations of both your product(s) and their product(s) unless you commit to submit and submit the required data in the specified timeframe. In such cases, the Agency generally will not grant a time extension for submitting the data.

If you are not now eligible for a formulator's exemption, you may qualify for one if you change your source of supply to a registered source that does not share ownership in common with your firm. If you choose to change sources of supply, the Confidential Statement of Formula must identify the new source(s) and you must submit a Formulator's Exemption Statement form.

If you apply for a new registration for products containing this active ingredient after the issuance of this Registration Standard, you will be required to submit or cite generic data relevant to the uses of your product if, at the time the application is submitted, the data have been submitted to the Agency by current registrants. If the required data have not yet been submitted, any new registration will be conditioned upon the new registrant's submission or citation of the required data not later than the date upon which current registrants of similar products are required to provide such data. See FIFRA sec. 3(c)(7)(A). If you thereafter fail to comply with the condition of that registration to provide data, the registration may be cancelled (FIFRA sec. 6(e)).

C. What generic data must be submitted?

You may determine which generic data you must submit by consulting Table A. That table lists the generic data needed to evaluate current uses of all products containing this active ingredient, the uses for which such data are required, and the dates by which the data must be submitted to the Agency.

D. How to comply with DCI requirements.

Within 90 days of your receipt of this Registration Standard, you must submit to EPA a completed copy of the form entitled "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1, enclosed) for each of your products. On that form you must state which of the following six methods you will use to comply with the DCI requirements:

1. You will submit the data yourself.
2. You have entered into an agreement with one or more registrants to jointly develop (or share in the cost of developing) the data, but will not be submitting the data yourself. If you use this method, you must state who will submit the data on which you will rely. You must also provide

EPA with documentary evidence that an agreement has been formed which allows you to rely upon the data to be submitted. Such evidence may be: (1) your letter offering to join in an agreement and the other registrant's acceptance of your offer, (2) a written statement by the parties that an agreement exists, or (3) a written statement by the person who will be submitting the data that you may rely upon its submission. The Agency will also require adequate assurance that the person whom you state will provide the data is taking appropriate steps to secure it. The agreement to produce the data need not specify all of the terms of the final arrangement between the parties or a mechanism to resolve the terms.

If you and other registrants together are generating or submitting requested data as a task force or consortium, a representative of the group should request a Joint Data Submitter Number from the Registration Support and Emergency Response Branch, Registration Division. The request must include the following information:

- a. A list of the members of the consortium;
- b. The name and address of the designated representative of the consortium, with whom EPA will correspond concerning the data;
- c. Identity of the Registration Standard containing the data requirement;
- d. A list of the products affected (from all members of the consortium); and
- e. Identification of the specific data that the consortium will be generating or submitting.

The Agency will assign a number to the consortium, which should be used on all data submissions by the consortium.

3. You have attempted to enter into an agreement to jointly develop data, but no other registrant has accepted your offer. You request that EPA not suspend your registration for non-compliance with the DCI. EPA has determined that, as a general policy, it will not suspend the registration of a product when the registrant has in good faith sought and continues to seek to enter into a data development/cost sharing program, but the other registrants developing the data have refused to accept its offer. [If your offer is accepted, you may qualify for Option 2 above by entering into an agreement to supply the data.]

In order to qualify for this method, you must:

1. File with EPA a completed "Certification of Attempt to Enter into an Agreement with other Registrants for Development of Data" (EPA Form 8580-6, enclosed).

2. Provide us with a copy of your offer to the other

registrant and proof of the other registrant's receipt of your offer (such as a certified mail receipt). Your offer must, at a minimum, contain the following language or its equivalent:

[Your company name] offers to share in the burden of producing the data required pursuant to FIFRA sec. 3(c)(2)(B) in the [name of active ingredient] Registration Standard upon terms to be agreed or failing agreement to be bound by binding arbitration as provided by FIFRA section 3(c)(2)(B)(iii).

The remainder of your offer may not in any way attempt to limit this commitment. If the other registrant to whom your offer is made does not accept your offer, and if the other registrant informs us on a DCI Summary Sheet that he will develop and submit the data required under the DCI, then you may qualify for this option. In order for you to avoid suspension under this method, you may not later withdraw or limit your offer to share in the burden of developing the data.

In addition, the other registrant must fulfill its commitment to develop and submit the data as required by this Notice in a timely manner. If the other registrant fails to develop the data or for some other reason would be subject to suspension, your registration as well as that of the other registrant will normally be subject to initiation of suspension proceedings, unless you commit to submit and submit the required data in the specified timeframe. In such cases, the Agency generally will not grant a time extension for submitting the data.

4. You request a waiver of the data requirement. If you believe that a data requirement does not (or should not) apply to your product or its uses, you must provide EPA with a statement of the reasons why you believe this is so. Your statement must address the specific composition or use factors that lead you to believe that a requirement does not apply. Since the Agency has carefully considered the composition and uses of pesticide products in determining that a data requirement applies, EPA does not anticipate that many waivers will be granted. A request for waiver does not extend the timeframes for developing required data, and if your waiver request is denied, your registration may be suspended if you fail to submit the data.

5. You request that EPA amend your registration by deleting the uses for which the data are needed. You are not required to submit data for uses which are no longer on your label.

6. You request voluntary cancellation of the registration of your product(s) for which the data are needed.

E. Testing Protocols, Standards for Conducting Acceptable Tests, Guidance on Evaluating and Reporting Data.

All studies required under this Notice must be conducted in accordance with test standards outlined in the Pesticide Assessment Guidelines, unless other protocol or standards are approved for use by the Agency in writing.

As noted herein, these EPA Guidelines, which are referenced in the Data Tables, are available from the National Technical Information Service (NTIS), Attn: Order Desk, 5285 Port Royal Road, Springfield, VA 22161 (tel: 703-487-4650).

Protocols approved by the Organization for Economic Cooperation and Development (OECD) are also acceptable if the OECD-recommended test standards conform to those specified in the Pesticide Data Requirements regulation (Part 158.70). Please note, however, that certain OECD standards (such as test duration, selection of test species, and degradate identification which are environmental fate requirements) are less restrictive than those in the EPA Assessment Guidelines listed above. When using the OECD protocols, they should be modified as appropriate so that the data generated by the study will satisfy the requirements of Part 158. Normally, the Agency will not extend deadlines for complying with data requirements when the studies were not conducted in accord with acceptable standards. The OECD protocols are available from OECD, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006.

F. Procedures for requesting a change in testing protocol.

If you will generate the required data and plan to use test procedures which deviate from EPA's Pesticide Assessment Guidelines or the Reports of Expert Groups to the Chemicals Group, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must submit for EPA approval the protocols you propose to use.

You should submit your protocols before beginning testing, because the Agency will not ordinarily accept as sufficient studies using unapproved protocols. A request for protocol approval will not extend the timeframe for submission of the data, nor will extensions generally be given to conduct studies due to submittal of inappropriate protocols.

G. Procedures for requesting extensions of time.

If you think that you will need more time to generate the data than is allowed by EPA's schedule, you may submit a request for an extension of time. Any request for a time

extension which is made as an initial response to a section 3(c)(2)(B) request notice must be submitted in writing to the Product Manager listed at the end of this section and must be made by the 90-day deadline for response. Once dates have been committed to and EPA has accepted these commitments, any subsequent requests for a time extension must be submitted in writing to the Office of Compliance Monitoring at the address given in Section IX.E.

EPA will view failure to request an extension before the data submission response deadline as a waiver of any future claim that there was insufficient time to submit the data. While EPA considers your request, you must strive to meet the deadline for submitting the data.

The extension request should state the reasons why you believe that an extension is necessary and the steps you have taken to meet the testing deadline. Time extensions normally will not be granted due to problems with laboratory capacity or adequacy of funding, since the Agency believes that with proper planning these can be overcome.

A request for an extension does not extend the timeframe for submission of the data. If EPA denies your request for a time extension and you do not submit the data as requested, EPA may begin proceedings to suspend the registrations of your products.

H. PR Notice 86-5 and Any Other Requirements Referenced or Included Within this Notice.

All data submitted in response to this Notice must comply with EPA requirements regarding the reporting of data, including the manner of reporting, the completeness of results, and the adequacy of any required supporting (or raw) data, including, but not limited to, requirements referenced or included in this Notice or contained in PR Notice 86-5 (issued July 29, 1986).

I. Existing stocks provision upon suspension or cancellation.

The Agency has determined that if a registration is suspended for failure to respond to a DCI request under FIFRA sec. 3(c)(2)(B), an existing stocks provision is not consistent with the Act. Accordingly, the Agency does not anticipate granting permission to sell or distribute existing stocks of suspended product except in rare circumstances. If you believe that your product will be suspended or cancelled and that an existing stocks provision should be granted, you have the burden of clearly demonstrating to EPA that granting

such permission would be consistent with the Act. The following information must be included in any request for an existing stocks provision:

1. Explanation of why an existing stocks provision is necessary, including a statement of the quantity of existing stocks and your estimate of the time required for their sale or distribution; and
2. Demonstration that such a provision would be consistent with the provisions of FIFRA.

VII. REQUIREMENT FOR SUBMISSION OF PRODUCT-SPECIFIC DATA

Under its DCI authority, EPA has determined that certain product-specific data are required to maintain your registrations in effect. Product-specific data are derived from testing using a specific formulated product, and, unlike generic data, generally support only the registration of that product. All such data must be submitted by the dates specified in this Registration Standard.

If you have a manufacturing use product, these data are listed in Table B. If you have an end use product, the data are listed in Table C. As noted earlier, the Agency has decided that it will not routinely require product-specific data for end use products at this time. Therefore, Table C may not be contained in this Registration Standard; if there is no Table C, you are not required to submit the data at this time.

In order to comply with the product specific data requirements, you must follow the same procedures as for generic data. See Section VI.D, E, F, and G. You should note, however, that product chemistry data are required for every product, and the only acceptable responses are options VI.D.1. (submit data) or VI.D.6.(cancellation of registration).

Failure to comply with the product-specific data requirements for your products will result in suspension of the product's registration.

VIII. REQUIREMENT FOR SUBMISSION OF REVISED LABELING

FIFRA requires each product to be labeled with accurate, complete and sufficient instructions and precautions, reflecting the Agency's assessment of the data supporting the product and its uses. General labeling requirements are set out in 40 CFR 162.10 (see Appendix II - LABELING and SUMMARY). In addition, labeling requirements specific to products containing this pesticide are specified in Section IV.D of this Registration Standard. Applications submitted in response to this notice must include draft labeling for Agency review.

If you fail to submit revised labeling as required, which complies with 40 CFR 162.10 and the specific instructions in Section IV.D., EPA may seek to cancel or suspend the registration of your product under FIFRA sec. 6.

IX. INSTRUCTIONS FOR SUBMISSION

A. Manufacturing Use Products (MUPs) containing the subject pesticide as sole active ingredient.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division for each product subject to this Registration Standard:

- a. The "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1), with appropriate attachments.⁵
- b. Confidential Statement of Formula (EPA Form 8570-4).
- c. Generic Data Exemption Statement (EPA Form 8570-27), if applicable.
- d. Evidence of compliance with data compensation requirements of FIFRA sec. 3(c)(1)(D). Refer to 40 CFR 152.80-152.99. Refer to Certification With Respect to Citation of Data Form.

⁵ If on the Summary Sheet, you commit to develop the data, present arguments that a data requirement is not applicable or should be waived, or submit protocols or modified protocols for Agency review, you must submit a copy of the Summary Sheet (and any supporting information) to the Office of Compliance Monitoring, which will be monitoring the data generated in response to this notice. This submission is in addition to responding to the Product Manager, and should be submitted to the Office of Compliance Monitoring at the address given at the end of this section. (Actual studies are not to be submitted to the Office of Compliance Monitoring.)

2. Within 9 months from receipt of this document you must submit to the Product Manager:

a. Application for Pesticide Registration (EPA Form 8570-1).

b. Two copies of any required product-specific data (See Table B).

c. Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft label must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text.

d. Product Specific Data Report (EPA Form 8580-4).

3. Within the times set forth in Table A, you must submit to the Registration Division all generic data, unless you are eligible for the formulator's exemption. If for any reason any test is delayed or aborted so that the schedule cannot be met, immediately notify the Product Manager and the Office of Compliance Monitoring of the problem, the reasons for the problem, and your proposed course of action.

B. Manufacturing Use Products containing the subject pesticide in combination with other active ingredients.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division:

a. FIFRA sec. 3(c)(2)(B) Summary Sheet, with appropriate attachments⁵ (EPA Form 8580-1).

b. Confidential Statement of Formula (EPA Form 8570-4)

c. Generic Data Exemption Statement (EPA Form 8570-27), if applicable.

2. Within 9 months of receipt of this document, you must submit to the Product Manager:

Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft label must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text.

3. Within the time frames set forth in Table A, you must submit to the Registration Division all generic data, unless you are eligible for the formulator's exemption. If for any reason any test is delayed or aborted so that the schedule cannot be met, immediately notify the Product Manager and the Office of Compliance Monitoring of the problem, the reasons for the problem, and your proposed course of action.

C. End Use Products containing the subject pesticide as sole active ingredient.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division:

a. Formulator's Exemption Statement (EPA Form 8570-27), if applicable.

2. Within 9 months from receipt of this document you must submit to the Product Manager:

a. Two copies of any product-specific data, if required by Table C.

b. Product Specific Data Report (EPA Form 8580-4), if Table C lists required product-specific data.

c. Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft labeling must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text. End use product labeling must comply specifically with the instructions in Section IV (Regulatory Position and Rationale).

D. End Use Products containing the subject active ingredient as one of multiple active ingredients

Within 9 months from the receipt of this document, you must submit to the Product Manager:

Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft labeling must indicate the intended colors of the final label, clear indication

of the front panel of the label, and the intended type sizes of the text. End use product labeling must comply specifically with the instructions in Section IV (Regulatory Position and Rationale).

- E. Intrastate Products containing the subject pesticide either as sole active ingredient or in combination with other active ingredients.

Applications for full Federal registration of intrastate products are required to be submitted no later than July 31, 1988.

F. Addresses

The required information must be submitted to the following address:

William H. Miller (PM-16)
Registration Division (TS-767C)
Office of Pesticide Programs
Environmental Protection Agency
401 M St., SW
Washington, D.C. 20460

The address for submissions to the Office of Compliance Monitoring is:

Laboratory Data Integrity Program
Office of Compliance Monitoring (EN-342)
Environmental Protection Agency
401 M St., SW
Washington, D.C. 20460.

I. DATA APPENDICES

TEGUIDE-1

GUIDE TO TABLES

Tables A, B, and C contain listings of data requirements for the pesticides covered by this Registration Standard.

Table A contains generic data requirements that apply to the pesticide in all products, including data requirements for which a "typical formulation" is the test substance.

Table B contains product-specific data requirements that apply only to a manufacturing use product.

Table C contains product-specific data requirements that apply only to an end use product.

The data tables are generally organized according to the following format:

1. Data Requirement (Column 1). The data requirements are listed in the order in which they appear in 40 CFR Part 158. The reference numbers accompanying each test refer to the test protocols set out in the Pesticide Assessment Guidelines, which are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.
2. Test Substance (Column 2). This column lists the composition of the test substance required to be used for the test, as follows:

TGAI = Technical grade of the active ingredient
PAI = Pure active ingredient
PAIRA = Pure active ingredient, radio labeled
TEP = Typical end use formulation
MP = Manufacturing use product
EP = End use product

Any other test substances, such as metabolites, will be specifically named in Column 2 or in footnotes to the table.

3. Use pattern (Column 3). This column indicates the use patterns to which the data requirement applies. Use patterns are the same as those given in 40 CFR Part 158. The following letter designations are used for the given use patterns:

A = Terrestrial, food
B = Terrestrial, non-food
C = Aquatic, food
D = Aquatic, non-food
E = Greenhouse, food
F = Greenhouse, non-food
G = Forestry
H = Domestic outdoor
I = Indoor
N/A = There are no registered use patterns for which the data requirement applies.

TEGUIDE-2

4. Does EPA have data? (Column 4). This column indicates one of three answers:

YES - EPA has data in its files that completely satisfy this data requirement. These data may be cited by other registrants in accordance with data compensation requirements of Part 152, Subpart E.

PARTIALLY - EPA has some data in its files, but such data do not fully satisfy the data requirement. In some cases, the Agency may possess data on one of two required species, or may possess data on one test substance but not all. The term may also indicate that the data available to EPA are incomplete. In this case, when the data are clarified, or additional details of the testing submitted by the original data submitter, the data may be determined to be acceptable. If this is the case, a footnote to the table will usually say so.

NO - EPA either possesses no data which are sufficient to fulfill the data requirement, or the data which EPA does possess are flawed scientifically in a manner that cannot be remedied by clarification or additional information.

5. Bibliographic citation (Column 5). If the Agency has acceptable data in its files, this column lists the identifying number of each study. This normally is the Master Record Identification (MRID) number, but may be a GS number if no MRID number has been assigned. Refer to the Bibliography Appendices for a complete citation of the study.

6. Must additional data be submitted? (Column 6). This column indicates whether the data must be submitted to the Agency. If column 3 indicates that the Agency already has data, this column will usually indicate NO. If column 3 indicates that the Agency has only partial data or no data, this column will usually indicate YES. In some cases, even though the Agency does not have the data, EPA will not require its submission because of the unique characteristics of the chemical; because data on another chemical can be used to fulfill the data requirement; or because the data requirement has been waived or reserved. Any such unusual situations will be explained in a footnote to the table.

7. Timeframe for submission (Column 7). If column 5 requires that data be submitted, this column indicates when the data are to be submitted, based on the issuance date of the Registration Standard. The timeframes are those established either as a result of a previous Data Call-In letter, or standardized timeframes established by PR Notice 85-5 (August 22, 1985).

8. Footnotes (at the end of each table). Self-explanatory.

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data? ^{1/}	Bibliographic Citation ^{1/}	Must Additional Data be Submitted?	Timeframe for Submission ^{2/}
<u>§158.120 Product Chemistry</u>						
<u>Product Identity:</u>						
61-1 - Product Identity and Disclosure of Ingredients	TGAI	All			Yes	9 Months
61-2 - Description of Beginning Materials and Manufacturing Process	TGAI	All			Yes	9 Months
61-3 - Discussion of Formation of Impurities	TGAI	All			Yes	9 Months
<u>Analysis and Certification of Product Ingredients:</u>						
62-1 - Preliminary Analysis	TGAI	All			Yes	12 Months
62-2 - Certification of Limits	TGAI	All			Yes	12 Months
62-3 - Analytical Methods to Verify Certified Limits	TGAI	All			Yes	12 Months
<u>Physical and Chemical Characteristics:</u>						
63-2 - Color	TGAI	All			Yes	9 Months
63-3 - Physical State	TGAI	All			Yes	9 Months

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data? ^{1/}	Bibliographic Citation ^{1/}	Must Additional Data be Submitted?	Timeframe for Submission ^{2/}
<u>\$158.120 Product Chemistry (cont'd)</u>						
<u>Physical and Chemical Characteristics: (cont'd)</u>						
63-4 - Odor	TGAI	ALL			Yes	9 Months
63-5 - Melting Point	TGAI	ALL			Yes ^{3/}	9 Months
63-6 - Boiling Point	TGAI	ALL			Yes ^{4/}	9 Months
63-7 - Density, Bulk Density, or Specific Gravity	TGAI	ALL			Yes	9 Months
63-8 - Solubility	TGAI or PAI	ALL			Yes	9 Months
63-9 - Vapor Pressure	TGAI or PAI	ALL			Yes	9 Months
63-10 - Dissociation Constant	TGAI or PAI	ALL			Yes	9 Months
63-11 - Octanol/Water Partition Coefficient	PAI	ALL			Yes	9 Months
63-12 - pH	TGAI	ALL			Yes	9 Months
63-13 - Stability	TGAI	ALL			Yes	9 Months
<u>Other Requirements:</u>						
64-1 - Submittal of Samples	TGAI, PAI	ALL			Reserved ^{5/}	

§158.125 Residue Chemistry (cont'd)

- 75/ Data are required to determine the potential for concentration of malathion residues of concern in dehydrated citrus pulp, citrus oil, molasses, and juice processed from oranges bearing measurable, weathered residues. If residues concentrate in any commodity, the registrant must propose an appropriate food/feed additive tolerance.
- 76/ Data are required to determine malathion residues of concern in or on tangerines. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on tangerines; or b) indicate support of the use on oranges and request that the required data for that use pattern be used to support the use on tangerines.
- 77/ A crop group tolerance is not appropriate at this time because adequate residue data are not available for representative crops of this group (apples and pears) and the metabolism of malathion in plants is not adequately understood.
- 78/ Data are required to determine malathion residues of concern in or on apples harvested 3 days following multiple foliar application of a D, the 25% WP, and an EC formulation (each in separate tests) at 3 lb ai/A, 2 ai/A, and 15 lb ai/A, respectively. Tests must be conducted in CA, NY, NC or VA, and WA. The registrant must propose a maximum number of application per season or a maximum seasonal rate for each use. The requested data must reflect the maximum rate.
- Data are also required to determine malathion residues of concern in or on apples harvested 3 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, and CA810055.
- 79/ Data are required to determine malathion residues of concern in dry apple pomace and juice processed from apples bearing measurable, weathered residues. If residues concentrate in any of these processed commodities then an appropriate food/feed additive tolerance must be proposed.
- 80/ Data are required to determine malathion residues of concern in or on pears harvested 1 day following multiple foliar applications of the 5% D formulation at 3 lb ai/A, the 25% WP formulation at 2 lb ai/A, and an EC formulation at 15 lb ai/A (each formulation must be applied in a separate test). Tests must be conducted in CA and either OR or WA. The registrant must propose a maximum seasonal rate or number of applications per season. The requested data must reflect this maximum.

§158.125 Residue Chemistry (cont'd)

Data are also required to determine malathion residues of concern in or on pears harvested 1 day following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, and CA810055.

- 81/ Data are required to determine malathion residues of concern in or on quinces. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either a) request a determination of the specific formulations, rates, and application schedule to be tested on quinces; or b) indicate support of the use on apples and request that the required data for that use pattern be used to support the use on quinces.
- 82/ A crop group tolerance is not appropriate at this time because adequate residue data are not available for representative crops of this group (cherries, peaches, and plums) and the metabolism of malathion in plants is not adequately understood.
- 83/ Data are required to determine malathion residues of concern in or on apricots harvested 7 days following multiple foliar application of: (i) the 5% D formulation at 3 lb ai/A; (ii) the 25% WP formulation at 1 lb ai/100 gal; and (i) an EC formulation at 10 lb ai/A. In addition, the registrant must amend all pertinent labels specifying a maximum lb ai/A application rate for use of the 25% WP formulation, and the requested data must reflect this rate. Tests must be conducted in CA. The registrant must propose a maximum seasonal application rate or number of application per season. The required tests must reflect this maximum.
- 84/ Data are required to determine malathion residues of concern in or on cherries harvested 3 days following multiple foliar applications of the 5% D and 25% WP formulations (each in separate tests) at 3 lb ai/A and an EC formulation at 8 lb ai/A. Tests must be conducted in MI and CA, OR, or WA. The registrant must propose a maximum seasonal application rate or number of applications per season. Required tests must reflect this maximum.
- 85/ Data are required to determine malathion residues of concern in or on nectarines. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on nectarines; or b) indicate support of the use on apricots and request that the required data for that use pattern be used to support the use on nectarines.

§158.125 Residue Chemistry (cont'd)

- 86/ Data are required to determine malathion residues of concern in or on peaches harvested 7 days following multiple foliar applications of, in separate tests: (i) a D formulation at 3 lb ai/A; (ii) the 25% WP formulation at 3 lb ai/A and (iii) an EC formulation at 9 lb ai/A. Tests must be conducted in CA, GA or SC, and MI or PA. The registrant must propose a maximum seasonal application rate or number of applications per season. The requested data must reflect the proposed number of applications or maximum seasonal rate.
- 87/ Data are required to determine malathion residues of concern in or on plums or fresh prunes harvested 3 days following multiple foliar applications at 7-day intervals in separate tests of: (i) a D formulation at 3 lb ai/A; (ii) the 25% WP formulation at 1 lb ai/100 gal; and (iii) an EC formulation at 10 lb ai/A. In addition, the registrant must amend all pertinent labels specifying a maximum lb ai/A/application rate for use of the 25% WP formulation, and the requested data must reflect this rate. Tests must be conducted in ID, MI, and WA. The registrant must propose a maximum seasonal application rate or number of application per season. The requested data must reflect this maximum.
- 88/ Data are required to determine malathion residues of concern in dried prunes processed from plums (fresh prunes) bearing measurable weathered residues. If concentration is found to occur during processing, an appropriate food additive tolerance must be proposed.
- 89/ A crop group tolerance is not appropriate at this time because adequate residue data are not available for representative crops of this group (blueberries, blackberries, cranberries, grapes, and strawberries) and the metabolism of malathion in plants is not adequately understood.
- 90/ Data are required to determine malathion residues of concern in or on blackberries harvested 1 day following multiple foliar application of a D and (in a separate test) an EC formulation at 4 and 4.5 lb ai/A, respectively, and the 25% WP formulation at 2 lb ai/A. Tests must be conducted in OR. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. The requested data must reflect this maximum rate.
- Data are also required to determine malathion residues of concern in or on blackberries harvested 1 day following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, and CA810055.

§158.125 Residue Chemistry (cont'd)

91/ Data are required to determine malathion residues of concern in or on blueberries harvested 1 day following the last of multiple foliar applications (in separate tests) of: (i) a D formulation at 2.5 lb ai/A (ii) the 25% WP formulation, mixed with bait, at 2 lb ai/A; (iii) an EC formulation at 2.5 lb ai/A, and (iv) the 40% SC/L formulation at 2.5 lb ai/A. In addition, data are required depicting malathion residues in blueberries collected on the day of the last of multiple foliar applications (using aerial ULV equipment) of a RTU formulation (9.3-9.79 lb a.i./gal) at 0.76 lb ai/A. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate for each of these uses and the requested data must reflect this maximum total rate. Tests must be conducted in MI and NJ.

Data are also required to determine malathion residues of concern in or on blueberries collected 8 hours following the last of multiple foliar applications of the 5 lb/gal EC formulation (mixed with bait) at 0.625 lb ai/A. Tests must be conducted in OR or WA. The requested data must reflect a maximum seasonal application rate proposed by the registrant.

92/ Data are required to determine malathion residues of concern in or on winter boysenberries. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on boysenberries; or b) indicate support of the use of blackberries and request that the required data for that use pattern be used to support the use on boysenberries.

93/ Data are required to determine malathion residues of concern in or on cranberries harvested 3 days following the last multiple foliar applications of a D and an EC formulation at 2.5 lb ai/A and the 25% WP formulation at 0.625 lb ai/A. (Each formulation type must be represented in a separate test.) The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. The requested data must reflect this maximum rate. Tests must be conducted in MA and WI.

Data are required to determine malathion residues of concern in or on cranberries harvested 14 days following application of an EC formulation to cranberry bog irrigation water in OR or WA at 2.5 lb ai/A. Alternatively the registrant may elect to cancel this use permitted under EPA SLN Nos. OR790063, WA780015, WA780053, and WA780054.

94/ Data are required to determine malathion residues of concern in or on currants. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on currants; or b) indicate support of the use on blueberries and request that the required data for that use pattern be used to support the use on currants.

§158.125 Residue Chemistry (cont'd)

95/ Data are required to determine malathion residues of concern in or on dewberries. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on dewberries; or b) indicate support of the use on blackberries and request that the required data for that use pattern be used to support the use on dewberries.

96/ Data are required to determine malathion residues of concern in or on gooseberries. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on gooseberries; or b) indicate support of the use on blueberries and request that the required data for that use pattern be used to support the use on gooseberries.

97/ Data are required to determine malathion residues of concern in or on grapes harvested 3 days following the last of multiple foliar applications of a D and, in a separate test, an EC formulation at 2.75 lb ai/A, the 25 WP formulation at 1.5 lb ai/A, and the 40% SC/L formulation at 5 pt of product/A. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate. The requested data must reflect the maximum seasonal rate. The tests must be conducted in CA.

In addition, the registrant must submit data depicting total residues of malathion on raisins processed from grapes harvested 3 days following multiple foliar treatments at 2.75 lb ai/A and dried on tray treated with an EC formulation or the 1.8% impregnated formulation at 200 mg ai/sq ft of tray.

Data are also required to determine malathion residues of concern in or on grapes harvested 3 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. The registrant must also submit data depicting residue on raisins processed from grapes receiving multiple applications at 3 lb ai/A and dried on trays treated at 200 mg ai of malathion/sq ft. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

98/ Data are required to determine the potential for concentration of malathion residues in dry pomace, raisin waste, and grape juice processed from raisins bearing measurable weathered residues. If the data indicate a potential concentration of residues in any of these commodities, an appropriate food/feed additive tolerance must be proposed.

§158.125 Residue Chemistry (cont'd)

- 99/ Data are required to determine malathion residues of concern in or on loganberry. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on loganberry; or b) indicate support of the use on blackberries and request that the required data for that use pattern be used to support the use on loganberries.
- 100/ Data are required to determine malathion residues of concern in or on raspberries. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, a either: a) request a determination of the specific formulations, rates, and application schedule to be tested on raspberries; or b) indicate support of the use on blackberries and request that the required data for that use pattern be used to support the use on raspberries.
- 101/ Data are required to determine malathion residues of concern in or on strawberries harvested 3 days following multiple foliar applications of a D formulation at 2.5 lb ai/A and (in separate tests) the 25% WP and an EC formulation at 2 lb ai/A, each preceded by a preplant incorporated (to 6-8 inches) soil application of a D, WP, or EC formulation at 2 lb ai/A. The registrant must propose a maximum number of foliar applications per season or a maximum seasonal application rate. The requested data must reflect this maximum rate. Tests must be conducted in CA and FL.
- Data are also required to determine malathion residues of concern in or on strawberries harvested 3 day following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separated test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.
- 102/ A crop group tolerance is not appropriate at this time because adequate residue data are not available for representative crops of the group (almonds and English walnuts) and the metabolism of malathion in plants is not adequately understood.
- 103/ Data are required to determine malathion residues of concern in or on almonds and almond hulls harvested the day of the last of multiple foliar applications of (in separate tests) the 25% WP formulation at 1 lb ai/A and an EC formulation at 8 lb ai/A. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required tests must reflect the proposed maximum rate. Tests must be conducted in CA.

§158.125 Residue Chemistry (cont'd)

- 104/ Data are required to determine malathion residues of concern in or on chestnuts harvested following multiple application the last application made at shuck-split of (in separate tests) the 25% WP formulation 0.5 lb ai/100 gal and an EC formulation at 5 lb ai/A. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required tests must reflect the proposed maximum rate. Tests must be conducted in the major chestnut growing regions of the U.S.
- 105/ Data are required to determine malathion residues of concern in or on filberts harvested 3 days after the last of multiple foliar applications of a D formulation at 3 lb ai/A. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required data must reflect the proposed maximum rate. Tests must be conducted in OR.
- 106/ Data are required to determine malathion residues of concern in or on Macadamia nuts harvested on the day the last of multiple foliar applications of (in separate tests) the 25% WP formulation at 1 lb ai/100 gal and an EC formulation at 15 lb ai/A. In addition, the registrant must amend all pertinent labels to include a maximum 1b ai/A/application rate for use of the 25% WP formulation, and the requested data must reflect this rate. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required tests must reflect the proposed maximum rate. Tests must be conducted in HI.
- 107/ Data are required to determine malathion residues of concern in or on pecans. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on pecans; or b) indicate support of the use on walnuts and request that the required data for that use pattern be used to support the use on pecans. The translated data may not be used to support a crop group tolerance.
- 108/ Data are required to determine malathion residues of concern in or on walnuts harvested on the day of the last of multiple foliar applications of (in separate tests) the 25% WP formulation, an EC formulation, and a D formulation at 2.5, 12.5, and 12.0 lb ai/A, respectively. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required tests must reflect the proposed maximum rate. Tests must be conducted in CA.
- 109/ A crop group tolerance is not appropriate at this time because adequate residue data are not available for representative crops of this group (corn, rice, sorghum, and wheat) and the metabolism of malathion in plants is not adequately understood.
- 110/ Since barley forage, hay, and straw are raw agricultural commodities, the registrant must either propose tolerances and provide appropriate supporting residue data or revise labeling to incorporate a feeding restriction.

\$158.125 Residue Chemistry (cont'd)

111/ Data are required to determine malathion residues of concern in or on corn grain and sweet corn harvested 5 days following multiple foliar applications of a D formulation at 1.5 lb ai/A, the 25% WP and an EC formulation at 1.25 lb ai/A, and the 9.7 or 9.79 lb/gal RTU formulation at 0.3 lb ai/A (using ULV equipment); each formulation must be represented in a separate test. Grain tests must be conducted in IA, IL, and NE. Sweet corn tests must be conducted in CA, FL, MN, and WI.

Data are also required to determine malathion residues of concern in or on corn grain and sweet corn harvested 5 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb AI/gal, 8 lb AI/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in at least 10 gal/A. The required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

Since corn forage and fodder are raw agricultural commodities, the registrant must propose tolerances and submit appropriate supporting residue data.

112/ Since oat forage, hay, and straw are raw agricultural commodities, the registrant must either propose tolerance and provide appropriate supporting residue data or revise labeling to incorporate a feeding restriction.

113/ Data are required to determine malathion residues of concern in or on rice grain collected 7 days following the last of multiple foliar applications of an EC formulation at 1.75 lb ai/A (using ground and aerial equipment in separate tests) and, in a separate test, a RTU formulation (9.3-9.7 lb a.i./gal) at 0.58 lb ai/A using aerial ULV equipment. Tests must be conducted in AR, LA or TX, and CA. The registrant must propose a maximum number of preharvest applications and the requested data must reflect this number.

Data are also required to determine malathion residues of concern in or on rice harvested 7 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registration may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

§158.125 Residue Chemistry (cont'd)

Data are required to determine malathion residues of concern in or on rice grain harvested 7-days following the last of multiple foliar applications of an EC formulation at 2 lb ai/A. These tests must be conducted in CA. The number of applications must reflect the maximum number or total seasonal rate proposed by the registrant.

Since rice straw is a raw agricultural commodity, the registrant must propose a tolerance and submit appropriate supporting residue data or revise labeling to incorporate a feeding restriction.

Since rye forage and straw are raw agricultural commodities, the registrant must either propose tolerance and provide appropriate supporting residue data or revise labeling to incorporate a feeding restriction.

114/ Since rye forage and straw are raw agricultural commodities, the registrant must either propose tolerance and provide appropriate supporting residue data or revise labeling to incorporate a feeding restriction.

115/ Data are required to determine malathion residues of concern in or on sorghum grain harvested 7 days following the last of multiple foliar applications of an EC formulation and, in a separate test, ULV application of a RTU formulation (9.3-9.79 lb/gal) at 0.94 lb ai/A. Tests must be conducted in AR or TX and KS or NE. The registrant must propose a maximum number of applications per season and the submitted data must reflect this maximum number.

Data are also required to determine malathion residues of concern in or on sorghum grain harvested 7 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of application in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

116/ Since the straw of wild rice is a raw agricultural commodity, the registrant must propose a tolerance and submit appropriate supporting residue data or revise labeling to incorporate a feeding restriction.

117/ Data are required to determine malathion residues of concern in or on wheat grain harvested 7 days following the last of multiple foliar applications of a D, the 25% WP, an EC and the 40% SC/L formulation (ULV at 1.25 lb ai/A/application and a RTU formulation (9.3-9.79 lb/gal) at 0.61 lb ai/A/application must be application). Each formulation type must be represented in a separate test. ULV applications must be applied using ground and aerial equipment in separate tests. Tests must be conducted in KS or CO; MN, ND, or SD; TX or OK; and WA or MT. The registrant must propose a maximum seasonal application rate or a maximum number of applications per season. The requested data must reflect this maximum total rate. Also, since wheat forage and hay are raw agricultural commodities, the registrant must propose tolerances and provide appropriate residue data for these commodities.

§158.125 Residue Chemistry (cont'd)

Data are also required to determine malathion residues of concern in or on wheat harvested 7 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulations and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a least 10 gal/A. The required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

118/ A crop group tolerance is not appropriate at this time because adequate residue data are not available for representative crops of the group (sorghum forage) and the metabolism of malathion in plants is not adequately understood.

119/ Data are required to determine malathion residues of concern in or on sorghum forage and sorghum hay harvested 7 days following the last multiple foliar applications of an EC formulation at 0.94 lb ai/A. The registrant must propose a maximum seasonal application rate or number of applications, and the submitted data must reflect this maximum rate. We note that the available data support five applications of the ULV RTU formulations or a total seasonal rate of 4.7 lb ai/A. Tests must be conducted in KS or NE and TX.

Data are also required to determine malathion residues of concern in or on sorghum forage harvested 7 days following multiple applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses, permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA81005 and CA810055.

Since sorghum fodder is a raw agricultural commodity, the registrant must propose a tolerance and submit appropriate supporting residue data.

120/ Data are required to determine malathion residues of concern in or on Bermuda grass, bluegrass, and brome grass or fescue (as fresh grass and hay) harvested 7 days following multiple foliar applications of a D, the 25% WP, and an EC formulation at 2 lb ai/A (each formulation must be applied in a separate test). Both aerial and ground equipment must be represented in separate tests. The registrant must propose a maximum seasonal use rate or number of treatments per season. The required tests must reflect this number or maximum rate. Tests must be conducted in AR, KS, KY, MO, NY, OK, PA, TN, TX, and VA.

§158.125 Residue Chemistry (cont'd)

Data are required to determine malathion residues of concern in or on Bermuda grass, bluegrass, and brome grass or fescue (as fresh grass and hay) harvested on the day of the last of multiple foliar application of a RTU formulation using both ground and aerial ULV equipment (9.3-9.79 lb/gal) at 0.875 lb ai/A. The registrant must propose a maximum seasonal use rate or number of treatments per season. The required tests must reflect this number or maximum rate.

Data are also required to determine malathion residues of concern in or on Bermuda grass, bluegrass, and brome grass or fescue (as fresh grass and hay) harvested 7 days following multiple foliar applications (using ground and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA8100525, CA810053, CA810054, and CA810055.

121/

Data are required to determine malathion residues of concern in or on alfalfa forage and alfalfa hay (ca. 10 % moisture content) following the last of multiple foliar applications (using ground and aerial equipment) of a D, an EC, and the 25% WP formulations at 1.5 lb ai/A (0 days posttreatment) or 2.5 lb ai/A (7 days posttreatment). Each formulation must be applied in separate tests. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate for each registered use. The required tests must reflect this maximum number or rate. Tests must be conducted in CA, IA, MI, MN, NE, SD, and WI. The registrant must propose a tolerance for residues of malathion in or on alfalfa hay.

Data are required to determine malathion residues of concern in or on alfalfa forage and alfalfa hay (ca. 10% moisture content) harvested on the day of and 5 days after the last of multiple foliar applications of a RTU formulation at 0.58 lb ai/A and 1.16 lb ai/A, respectively; ground and aerial ULV equipment must be used in separate tests. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate for each registered use. The required tests must reflect this maximum number or rate. The registrant must propose a tolerance for residues of malathion in or on alfalfa hay.

Data are also required to determine malathion residues of concern in or on alfalfa forage and alfalfa hay (ca. 10% moisture content) harvested 7-days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the

§158.125 Residue Chemistry (cont'd)

required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. The registrant must propose a tolerance for residues of malathion in or on alfalfa hay. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

- 122/ Residue data and accompanying use directions are required to determine malathion residues of concern in or on birdsfoot trefoil forage and hay. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on birdsfoot trefoil; or b) indicate support of the use on alfalfa and request that the required data for that use pattern be used to support the use on birdsfoot trefoil.
- 123/ Data are required to determine malathion in residues of concern or on clover forage and clover hay resulting from the following treatment schedules: (i) multiple foliar applications of a D, the 25% WP, and an EC formulation at 2.5 lb ai/A (the last application must be made 7 days prior to harvest); (ii) multiple foliar applications of each of the aforementioned formulations at 1.5 lb ai/A (the last application made on the day of harvest); and (iii) multiple foliar applications of a RTU formulation (9.3-9.79 lb/gal) at 0.875 lb ai/A, the last application made on the day of harvest. Each formulation must be applied in a separate test, and separate tests using ground and aerial equipment must be conducted representing each use. The registrant must propose a maximum seasonal use rate or number of treatments per season or per cutting for each use. The required tests must reflect this number of applications or maximum rate. Tests must be conducted in ID, MI, MN, MS or GA, NY, OK, and WI. The registrant must propose a tolerance for residues of malathion in or on clover hay.
- Data are required to determine malathion residues of concern in or on clover forage and clover hay harvested on the day of the last of multiple foliar applications of a RTU formulation using aerial ULV equipment at 0.95 lb ai/A. The number of applications must reflect that proposed by the registrant. Tests must be conducted in OR. The registrant must propose a tolerance for residues of malathion in or on clover hay. Alternatively, the registrant may elect to cancel this use permitted under EPA SLN No. OR810070.
- Data are also required to determine malathion residues of concern in or on clover forage and clover hay harvested 7 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in minimum of 10 gal/A. The number of applications in the required tests must reflect either

\$158.125 Residue Chemistry (cont'd)

the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. The registrant must propose a tolerance for residues of malathion in or on clover hay. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

124/ Since lespedeza forage is a raw agricultural commodity, the registrant must propose a tolerance for residues of malathion in or on lespedeza forage and submit appropriate supporting residue data.

125/ Data are required to determine malathion residues of concern in or on lupine hay and forage harvested on the day of the last of multiple foliar applications of an EC formulation at 1.25 lb ai/A. Tests must be conducted in FL, GA, or SC. Alternatively, the registrant may propose a 7-day PHI and request that data on soybean forage, hay, and straw be translated to lupine hay.

Since lupine forage is a raw agricultural commodity, the registrant must propose a tolerance for residues of malathion in or on forage and submit appropriate supporting residue data.

126/ Data are required to determine malathion residues of concern in or on vetch forage and hay harvested 7 days following the last of multiple foliar applications of (in separate tests) a D, the 25% WP, and an EC formulation at 1.25 lb ai/A. The registrant must propose a maximum number of applications per season or maximum seasonal application rate. Requested data must reflect this proposal. Tests must be conducted in CA, OK, OR, and PA. The registrant must propose a tolerance for vetch forage.

127/ Data are required to determine malathion residues of concern in or on asparagus harvested 1 day following the last of multiple foliar applications of a D, the 25% WP, and an EC formulation at 1.25 lb ai/A, with each formulation applied in a separate test. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate for each use and the requested data must reflect these maximum rates. Tests must be conducted in (1) MI and (2) CA or WA.

Data are also required to determine malathion residues of concern in or on asparagus harvested 1 day following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

§158.125 Residue Chemistry (cont'd)

128/ Data are required to determine malathion residues of concern in or on mature avocados harvested 7 days following multiple foliar applications of the 25% WP formulation at 1 lb ai/A and an EC formulation at 9 lb ai/A (each formulation must be applied in a separate test). Tests must be conducted in CA. The registrant must propose a maximum seasonal use rate or maximum number of applications per season and the data must reflect this maximum number or total rate.

Data are also required to determine malathion residues of concern in or on avocados resulting from multiple foliar application of the 95% RTU formulation using aerial ULV equipment at 0.6 lb ai/A. The number of applications made in the required test must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use. Tests must be conducted in CA. Alternatively the registrant may elect to cancel this use permitted under EPA SLN No. CA770303.

Data are also required to determine malathion residues of concern in or on avocados harvested 7 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, and CA810055.

129/ Data are required to determine malathion residues of concern in or on cottonseed collected on the day of the last of multiple foliar applications of the 25% WP, an EC formulation at 4 lb ai/A, and a D formulation at 7.25 lb ai/A, and a RTU formulation (9.3-9.79 lb/gal) using ULV equipment at 1.17 lb ai/A. Each formulation must be applied in a separate test using both ground and aerial equipment. Tests must be conducted in CA, MS, and TX. The registrant must propose a maximum number of applications per season or a total seasonal use rate. The requested data must reflect this maximum number or rate.

Since cotton forage is a raw agricultural commodity, the registrant must propose a tolerance for residues of malathion in or on cotton forage and submit appropriate supporting residue data.

130/ Data are required to determine the potential for concentration of malathion residues in meal, hulls, soapstock, crude oil, and refined oil processed from cottonseed bearing measurable weathered residues. If the data indicate a potential for concentration of residues in any processed commodity, an appropriate food/feed additive tolerance must be proposed.

§158.125 Residue Chemistry (cont'd)

131/ Data are required to determine malathion residues of concern in or on dates harvested 7 days following the last of multiple foliar applications of a D and an EC formulation at 2 lb ai/A, each formulation applied in a separate test. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate for each use and the requested data must reflect these maximum rates. Tests must be conducted in AZ or CA.

Data are required to determine malathion residues of concern in or on dates harvested 21 days following the last of multiple foliar applications of the 5% D formulation at 4.25 lb ai/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA820039, CA820040, and CA820041.

Data are also required to determine malathion residues of concern in or on dates harvested 21 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

132/ Data are required to determine malathion residues of concern in or on figs harvested 3 days following the last of multiple foliar applications of a D and an EC formulation at 2.0 lb ai/A and 2.5 lb ai/A, respectively. Each formulation must be applied in a separate test.

Data are also required to determine malathion residues of concern in or on figs harvested 3 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

\$158.125 Residue Chemistry (cont'd)

133/ Data are required to determine the potential for concentration of malathion residues of concern in dried figs processed from figs bearing measurable, weathered residues. If concentration occurs during processing, registrant must propose an appropriate food additive tolerance.

134/ Data are required to determine concentration of malathion during processing of flax meal and hulls derived from flax seed bearing measurable weathered residues. If concentration occurs during processing, the registrant must propose food/feed additive tolerances.

135/ Data are required to determine malathion residues of concern in or on guavas harvested 2 days following the last of multiple foliar applications of the 25% WP formulation at 0.75 lb ai/A (with bait). The registrant must propose a maximum number of applications per season or a maximum seasonal application rate. The requested data must reflect this maximum number or rate.

Data are required to determine malathion residues of concern in or on quavas harvested 2 days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

136/ The registrant must propose a label amendment that specifies a maximum seasonal use rate or maximum number of applications per season for hops. We note that the available data support a maximum of four applications per season or a total of 4 lb ai/A/season.

The registrant must propose a tolerance for residues of malathion in dried hops based on the concentration factor during drying of about 5x. The available data support a food additive tolerance of 5 ppm. The registrant must also propose a feed additive tolerance for malathion residues in spent hops at the same level as that for residues in dried hops.

137/ Data are required to determine malathion residues of concern in or on mangoes harvested following the last of multiple foliar applications of the 25% WP formulation at 0.75 lb ai/A mixed with bait material. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate. The requested data must reflect this maximum rate. Tests must be conducted in FL.

§ 58.125 Residue Chemistry (cont'd)

138/ Data are required to determine malathion residues of concern in or on mint harvested 7 days following the last of multiple foliar applications of the 5% D and an EC formulation (each in a separate test) at 1 lb ai/A. The registrant must propose a maximum number of applications per season and the requested data must reflect this maximum number. Tests must be conducted in OR.

Data are also required to determine malathion residues of concern in or on mint harvested 7-days following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

Since mint hay is a raw agricultural commodity, the registrant must either propose a tolerance and provide appropriate supporting residue data or revise labeling to incorporate feeding restriction.

139/ Data are required to determine the potential for concentration of malathion residues of concern in mint oil and spent hay processed from mint bearing measurable, weathered residues. If residues concentrate in either of these commodities, an appropriate food/feed additive tolerance must be proposed.

140/ Data are required to determine malathion residues of concern in or on mushrooms harvested 1 day following multiple applications of an EC and the 25% WP formulations (in separate tests) at 1.5 lb ai/A. Tests must be conducted in CA, MI, and PA. The registrant must propose a maximum number of applications per crop and the requested data must reflect this number.

Data are required to determine malathion residues of concern in or on mushrooms harvested on the day of the last of multiple drench applications of the 25% WP formulation to mushroom compost at 5 oz ai/3 gal/1000 sq ft. Alternatively, the registrant may elect to cancel this use permitted under EPA SLN No. NY810006.

Data are also required to determine malathion residues of concern in or on mushrooms collected 1 day following the last of multiple drench applications of the 25% WP formulation at (i) 2.5 oz ai/1000 sq ft; (ii) 5 oz ai/1000 sq ft; and 7.5 oz ai/1000 sq ft. Alternatively, the registrant may elect to cancel these uses permitted under (i) EPA SLN Nos. CA790174 and CA790190; (ii) EPA SLN Nos. CT780004, CT790004, PA780017, PA780019, MI790006, and OR790004; and (iii) EPA Reg. No. 279-739 in OR.

§158.125 Residue Chemistry (cont'd)

^{141/} Data are required to determine malathion residues of concern in or on okra harvested 1 day following multiple foliar applications of a D formulation at 1.25 lb ai/A and the 25% WP and an EC formulation each at 1.5 lb ai/A. Each formulation must be applied in a separate test. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate. Required tests must reflect the maximum number or seasonal rate proposed. Alternatively, the registrant may propose to limit this use to one application per season, which is supported by the available data. Tests must be conducted in GA and TX.

Data are also required to determine malathion residues of concern in or on okra harvested 1 day following multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or a maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA810052, CA810053, CA810054, and CA810055.

^{142/} Data are required to determine malathion residues of concern in or on mature papayas harvested immediately following the last of multiple foliar applications of the 25% WP (and in a separate test) an EC formulation at 1.25 lb ai/100 gal/A. Tests must be conducted in HI. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate. The requested data must reflect this maximum number or rate.

^{143/} Data are required to determine malathion residues of concern in or on passion fruit harvested following the last of multiple foliar applications of the 25% WP formulation at 0.75 lb ai/A with bait. The registrant must propose a maximum number of applications per season or a maximum seasonal application rate for each use and the requested data must reflect this maximum rate. Tests must be conducted in HI.

^{144/} Data are required to determine malathion residues of concern in or on mature peanuts harvested on the day of the last of multiple foliar applications of a D, an EC, and the 25% WP formulations (in separate tests) at 1 lb ai/A. Ground and aerial equipment must be represented in separate tests. Tests must be conducted in AL, GA, NC, VA, and TX. The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required tests must reflect this maximum number or rate.

The registrant must propose tolerances for malathion residues in or on the raw agricultural commodities hulls, hay, and vines of peanuts and provide appropriate supporting residue data.

§158.125 Residue Chemistry (cont'd)

145/ Data are required to determine malathion residues of concern in or on pineapples harvested 7 days following multiple foliar applications of the 5 lb/gal EC, 25% WP, and the 5% D formulation each at 5 lb ai/A (each formulation must be applied in a separate test). The registrant must propose a maximum number of applications per season or a maximum seasonal use rate. Required tests must reflect this maximum total rate. Tests must be conducted in HI.

Since pineapple forage is a raw agricultural commodity, the registrant must either propose a tolerance for pineapple forage and provide the appropriate supporting residue data, or revise labeling to incorporate feeding or grazing restrictions.

146/ Data are required to determine malathion residues of concern in pineapple juice and pineapple bran (chopped, dehydrated pineapple tops and shells) processed from pineapple fruit bearing measurable, weathered residues. If residues concentrate in any of these processed commodities then an appropriate food/feed additive tolerance must be proposed.

147/ Data are required to determine malathion residues of concern in or on safflower seed harvested 3 days following multiple foliar applications of an EC formulation at 1.25 lb ai/A and a RTU formulation (9.3-9.79 lb/gal or 95%) at 0.6 lb ai/A using ultra-low-volume equipment. Tests must be conducted in CA. The registrant must propose a maximum seasonal application rate or a maximum number of applications per season. Required studies must reflect the proposed total rate or number of applications.

Data are also required to determine malathion residues of concern in or on safflower seed harvested 3 days following the last of multiple foliar applications (using ground and aerial equipment in separate tests) of the 25% WP formulation and (in a separate test) the 5 lb/gal, 8 lb/gal, or 57% EC formulation at 3 lb ai/A. Ground applications must be made in at least 75 gal/A and aerial applications must be made in a minimum of 10 gal/A. The number of applications in the required tests must reflect either the maximum number proposed by the registrant to appear on the federal labels or maximum number proposed for this use in CA. Tests must be conducted in CA. Alternatively, the registrant may elect to cancel these uses permitted under EPA SLN Nos. CA810051, CA800152, CA800153, CA800154, and CA800155.

148/ Data are required to determine malathion residues of concern in meal and refined safflower oil processed from seed bearing measurable, weathered residues. If the data indicate a potential for concentration of residues in safflower meal, the registrant must propose a feed additive tolerance.

§158.125 Residue Chemistry (cont'd)

149/ Data are required to determine malathion residues of concern in or on watercress harvested 7 days following the last of foliar applications of the 5% D, 25% WP, and an EC formulation at 1.75 lb ai/A, 1.25 lb ai/A, and 2.0 lb ai/A, respectively (each formulation applied in a separate test). The registrant must propose a maximum number of applications per season or a maximum seasonal application rate. The requested data must reflect this maximum rate. Tests must be conducted in HI and FL.

Data are also required to determine malathion residues of concern on greenhouse-grown watercress collected 7 days following the last of multiple foliar applications of the 25% WP and (in a separate test) the 5 lb/gal EC formulation at 1.25 lb ai/100 gal, and, in a separate test, the 10% RTU formulation at 16.7 fl oz product/50,000 cu ft as a fog.

150/ Data are required to determine malathion residues of concern in or on tobacco harvested from the last of multiple foliar applications of a D, and an EC formulation (each in separate tests) at 1.56 lb ai/A. All significant tobacco plant metabolites must be determined using ring-labeled [¹⁴C]malathion. Any significant translocated degradation products from soil and photodegradation products must also be determined. If total residues found in or on tobacco are >0.1 ppm, then (i) complete analytical methods must be submitted for detecting and quantifying malathion and all metabolites of concern in or on tobacco and in tobacco smoke; and (ii) pyrolysis products from malathion must be characterized using ring-labeled [¹⁴C]malathion.

151/ Data are required to determine malathion residues of concern in or on shelled almond nutmeats sampled immediately following treatment of shelled almonds at 0.156 lb ai/10,000 lb of nuts using a D formulation.

152/ Data are required to determine malathion residues of concern in or on stored barley. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on barley; or b) indicate support of the use on wheat and request that the required data for that use pattern be used to support the use on barley.

153/ Data are required to determine malathion residues of concern in or on bagged citrus pulp sampled immediately following treatment schedule that includes initial treatment at 170 mg ai/sq ft and subsequent monthly treatments at 127 mg ai/sq ft. Treatments using a D, the 25% WP, and an EC formulation must be represented in separate tests.

§158.125 Residue Chemistry (cont'd)

154/ Data are required to determine malathion residues of concern in or on corn grain sampled immediately following the following series of applications which includes: (i) application of a D and an EC formulation a 0.66 lb ai/1000 bushels prior to storage in facilities which have received residual spray application of the 3% RTU formulation at 0.6 lb ai/1000 sq ft; (ii) treatment of the surface of stored seed using a D and EC formulation at 0.33 lb ai/1000 sq ft; and (iii) subsequent application of the 4% RTU at 2 fl oz of 4% spray/1000 cu ft.

Data are also required to determine the potential for concentration of malathion residues during processing of corn grain bearing measurable, weathered residues. Data are required for the following processed commodities: starch, crude oil, and refined oil from wet milling and grits, meal, flour, crude oil and refined oil from dry milling. If the data indicate a potential for concentration of residues in any of these commodities, the registrant must propose a food/feed additive tolerance.

A tolerance must be proposed and appropriate supporting residue data submitted for grain dust from stored corn which has received the full series of stored-commodity treatments listed in above.

155/ Data are required to determine malathion residues of concern in or on oats. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on oats; or b) indicate support of the use on wheat and request that the required data for that use pattern be used to support the use on oats.

156/ Data are required to determine malathion residues of concern in or on peanut nutmeats collected immediately after the last treatment in a series that includes: one pre-storage residual spray application to the warehouse interior using an EC formulation as a 3.4% finished spray (2 gal/1000 sq ft), then one treatment to the peanuts while moving onto storage using a D formulation at 1.25 lb ai/15 tons of peanuts and (in a separate test) an EC formulation at 1.7 lb ai/5 gal/15 tons. After the bin is filled in each test, the surfaces of the stored peanuts must be sprayed using the 25% WP formulation as a 1.65% finished spray (2 gal/1000 sq ft); a second such treatment must be made 1 month later, immediately prior to sampling. Data are required to determine malathion residues of concern in meal, crude oil, refined oil, and soapstock processed from stored peanuts bearing measurable, weathered residues. If residues concentrate in any of these processed commodities, then an appropriate food/feed additive tolerance must be proposed.

157/ Data are required to determine malathion residues of concern in or on raisins collected after 6 months of storage in trays treated with an EC formulation at 1.4 g ai/144 sq ft of tray paper or in trays manufactured using the 9% Impr formulation.

§158.125 Residue Chemistry (cont'd)

158/ Data are required to determine malathion residues of concern in or on rice grain sampled immediately following the following series of applications: (i) application of a D and an EC formulation at 0.66 lb ai/1000 bushels prior to storage in facilities which have received residual spray application of the 3% RTU formulation at 0.6 lb ai/1000 sq ft; (ii) treatment of the surface of stored seed using a D and EC formulation at 0.33 lb ai/1000 sq ft; and (iii) subsequent application of the 4% RTU at 2 fl oz of 4% spray/1000 cu ft.

The registrant must propose a tolerance for grain dust from rice and submit appropriate supporting residue data.

Data are also required depicting the potential for concentration of residues during processing rice grain bearing measurable weathered residues. Data are required for polished rice, hulls, and bran. If the data indicate a potential for concentration of residues in any of these commodities, the registrant must propose a food/feed additive tolerance.

159/ Data are required to determine malathion residues of concern in or on rye. The registrant must contact the Agency, within the allowed ninety (90) day period for indicating intention to support this use, and either: a) request a determination of the specific formulations, rates, and application schedule to be tested on rye; or b) indicate support of the use on wheat and request that the required data for that use pattern be used to support the use on rye.

160/ Data are required to determine malathion residues of concern in or on sorghum grain sampled immediately following the series of applications which includes: (i) application of a D and an EC formulation at 0.66 lb ai/1000 bushels prior to storage in facilities which have received residual spray application of the 3% RTU formulation at 0.6 lb ai/1000 sq ft; (ii) treatment of the surface of stored seed using a D and EC formulation at 0.33 lb ai/1000 sq ft; and (iii) subsequent application of the 4% RTU at 2 fl oz of 4% spray/1000 cu ft.

Data are also required to determine malathion residues of concern in flour and starch processed from sorghum grain bearing measurable, weathered residues. If the data indicate a potential for concentration of residues in either of these commodities during processing, a food/feed additive tolerance must be proposed.

The registrant must propose a tolerance for residues of malathion in grain dust from sorghum grain and submit appropriate supporting residue data.

§158.125 Residue Chemistry (cont'd)

161/ Data are required to determine malathion residues of concern in or on sunflower seeds sampled immediately following series of applications which includes: (i) application of a D and an EC formulation at 0.66 lb ai/bushels prior to storage in facilities which have received residual spray application of the 3% RTU formulation at 0.6 lb ai/1000 sq ft; (ii) treatment of the surface of stored seed using a D and EC formulation at 0.33 lb ai/1000 sq ft; and (iii) subsequent application of the 4% RTU at 2 fl oz of 4% spray/1000 cu. ft.

162/ Data are required to determine malathion residues of concern in or on wheat grain sampled immediately following the series of applications that includes: (i) application of a D and an EC formulation at 0.66 lb ai/1000 bushels prior to storage in facilities which have received residual spray application of the 3% RTU formulation at 0.6 lb ai/1000 sq ft; (ii) treatment of the surface of stored seed using a D and EC formulation at 0.33 lb ai/1000 sq ft; and (iii) subsequent application of the 4% RTU at 2 fl oz of 4% spray/1000 cu ft.

A tolerance must be proposed and appropriate supporting residue data submitted pertaining to residues of malathion in the additional processed commodity and feed item, wheat grain dust.

The registrant must propose appropriate tolerances for malathion residues in bran, flour, middlings, and shorts based on concentration factors of 57x, 8x, 10x, and 46x, respectively.

163/ A petition for a food additive regulation/tolerance must be submitted or the use in food areas of food handling establishments, restaurants, or other areas where food prepared or processed must be deleted from the labeling. The following type data must accompany the petition.

Data are required to determine the nature of residue in representative food products from typical food handling establishments resulting from known contamination by [¹⁴C]malathion (labeled in a benzene ring). Tests must represent the range of normal heating and processing procedures following fortification with the [¹⁴C]malathion at typical stages where contamination resulting from treatment of the establishment premises might occur. Characterization of residues must be conducted in samples representing the range of normal shelf life for the food products.

§158.125 Residue Chemistry (cont'd)

Data are also required to determine malathion residues of concern in food products resulting from application of malathion in a food service establishment and a food manufacturing or food processing establishment. Tests are required in these establishments utilizing a D, an EC and a RTU formulation as a contact spray, and a RTU as a fogging treatment. Tests conducted must be representative examples of worst case scenarios for potential residue contamination of food products which might include, but not be limited to, some of the following: (i) particulate aerosol contact with packaged products or unwrapped fresh produce present and/or on display at the time of malathion treatment; (ii) contact of packaged foods with treated surfaces, such as flour sacks stacked on treated floor surfaces in storage areas; (iii) accidental treatment of food work surfaces and subsequent contact of food before surfaces are cleaned; (iv) treatment occurring near stacks of new or cleaned product containers that are then filled without being cleaned; or (v) tracking of residues by insects or rodents from treated areas to food or food contact surfaces.

164/ Data are required to determine the nature and magnitude of the residue in water following treatment of intermittently flooded areas with multiple applications of the 6% G, an EC, a SC/L, and the 3% RTU formulation at 0.51 lb ai/A, the 1.9% EC formulation at 16 gal of product/acre-foot, and registered treatment of cranberry bogs and rice paddies (refer to the "Cranberry" and "Rice" sections for details of test requirements). Degradation products in water must be identified and quantified. Should detectable residues of concern occur in water then tolerance proposals for irrigated crops along with an estimated appropriate level in water will be required. In lieu of the above, the registrant may modify the use as follows: Broadcast use only over intermittently flooded areas. Application may not be made around bodies of water where fish or shellfish are grown and/or harvested commercially.

165/ The nature and magnitude of residues of malathion in water resulting from aquatic uses have not been identified. If detectable residues of concern are found in water (refer to the "Nature and Magnitude of the Residue in Drinking and Irrigation Water" section for details), then data from residue and metabolism studies using fish will be required. Since the present use sites may include tidal areas, data depicting residues in shellfish (a mollusc and a crustacean) will be required. If the registrant(s) modifies the present pertinent labels as discussed in footnote 164, then no additional information will be needed for fish and shellfish.

166/ This data is not required. On receipt of the data requested in the section entitled "Nature of the Residue in Animals," the appropriate nature of tolerances for residues in animal products will be determined and, with consideration for any newly found metabolites of toxicological concern, the adequacy of the available data regarding the magnitude of residue in cattle and swine will be determined. Additional data may be required.

§158.125 Residue Chemistry (cont'd)

167/ This data is not required. On receipt of the data requested in the section entitled "Nature of the Resid in Animals," the appropriate nature of tolerances for residues in animal products will be determined and, with consideration for any newly found metabolites of toxicological concern, the adequacy of the available data regarding the magnitude of residue in milk will be determined. Additional data may be required.

168/ This data is not required. On receipt of the data requested in the section entitled "Nature of the Residue in Animals," the appropriate nature of tolerances for residues in animal products will be determined and, with consideration for any newly found metabolites of toxicological concern, the adequacy of the available data regarding the magnitude of residue in fat, meat, and meat by-products and eggs will be determined. Additional data may be required.

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.130 Environmental Fate</u>						
<u>DEGRADATION STUDIES-LAB:</u>						
161-1 - Hydrolysis	TGAI or PAIRA	A, B, C, D, E, F, G, H	No		Yes	9 Months
<u>Photodegradation</u>						
161-2 - In Water	TGAI or PAIRA	A, B, C, D, G	No		Yes	9 Months
161-3 - On Soil	TGAI or PAIRA	A, G	No		Yes	9 Months
161-4 - In Air	TGAI or PAIRA	A	No		Yes	9 Months
<u>METABOLISM STUDIES-LAB:</u>						
162-1 - Aerobic Soil	TGAI or PAIRA	A, B, E, F, G, H	No		Yes	27 Months (12 Months - Progress Report)
162-2 - Anaerobic Soil	TGAI or PAIRA	A	No		Yes	27 Months (12 Months - Progress Report)
162-3 - Anaerobic Aquatic	TGAI or PAIRA	C, D, G	No		Yes	27 Months (12 Months - Progress Report)
162-4 - Aerobic Aquatic	TGAI or PAIRA	C, D	No		Yes	27 Months (12 Months - Progress Report)

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.130 Environmental Fate (continued)</u>						
<u>MOBILITY STUDIES:</u>						
163-1 - Leaching and Adsorption/ Desorption	TGAI or PAIRA	A, B, C, D, E, F, G, H	No		Yes	12 Months
163-2 - Volatility (Lab)	TEP	A, E, F	No		Yes	12 Months
163-3 - Volatility (Field)	TEP	A, E, F	No		Reserved ^{2/}	
<u>DISSIPATION STUDIES - FIELD:</u>						
164-1 - Soil	TEP	A, B, H	No		Yes	27 Months (12 Months - Progress Report)
164-2 - Aquatic (Sediment)	TEP	C, D, G	No		Yes	27 Months (12 Months - Progress Report)
164-3 - Forestry	TEP	G	No		Yes	27 Months (12 Months - Progress Report)
164-4 - Combination and Tank Mixes	TEP	N/A	No		No ^{3/}	
164-5 - Soil, Long-term	TEP	A, C	No		Reserved ^{4/}	To be Determined
<u>ACCUMULATION STUDIES:</u>						
165-1 - Rotational Crops (Confined)	PAIRA	A, C	No		Yes	39 Months ^{5/} (12 Months - Progress Report)

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.130 Environmental Fate (continued)</u>						
165-2 - Rotational Crops (Field)	TEP	A, C	No		Reserved ^{6/}	
165-3 - Irrigated Crops	TEP	C, D	No		Yes	39 Months ^{5/} (12 Months - Progress Report)
165-4 - In Fish	TGAI or PAIRA	A, B, C, D, G	No		Yes	12 Months
165-5 - In Aquatic Nontarget Organisms	TEP	D, G	No		Yes	12 Months

1/ Due dates refer to the number of months following receipt of this Registration Standard by the registrant, unless otherwise indicated.

2/ This study is reserved pending the results of the laboratory volatility study.

3/ The Agency is not imposing tank mix data requirements at this time.

4/ This study is reserved pending the results of the field dissipation studies.

5/ The first progress report is due twelve months after receipt of this Standard. Interim reports are due annually thereafter.

6/ This study is reserved pending the results of the confined rotational crop study. Once acceptable data are available appropriate rotational crop intervals (if needed) will be established.

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.140 Reentry Protection</u>						
132-1 - Foliar Dissipation	TEP	A, B	No		No ^{2/}	
132-1 - Soil Dissipation	TEP	A	No		No ^{2/}	
133-3 - Dermal Exposure	TEP	A, B	No		No ^{2/}	
133-4 - Inhalation Exposure	TEP	A, B	No		No ^{2/}	
<u>§158.142 Spray Drift</u>						
201-1 - Droplet Size Spectrum	TEP	A, B	No		Yes	18 Months
201-1 - Drift Field Evaluation	TEP	A, B	No		Yes	18 Months

^{1/} Due dates refer to number of months following receipt of this Registration Standard or as otherwise indicated.

^{2/} Data requirement has been waived. Although malathion is registered for use on crops whose production and/or harvest would require human tasks characterized by a high likelihood of dermal and inhalation exposure, malathion does not meet the toxicity requirements of §158.140.

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.135 Toxicology</u>						
<u>ACUTE TESTING:</u>						
81-1 - Acute Oral Toxicity - Rat	TGAI	A, B, C, D, E, F, G, H, I	Yes	00144490, 00158056 00159876, 00164730	No	
81-2 - Acute Dermal Toxicity - Rabbit	TGAI	A, B, C, D, E, F, G, H, I	Yes	00144491, 00158055, 00159877, 00164730	No	
81-3 - Acute Inhalation Toxicity - Rat	TGAI	A, B, C, D, E, F, G, H, I	Yes	00144492, 00158057, 00159878	No	
81-7 - Delayed Neurotoxicity - Hen	TGAI	A, B, C, D, E, F, G, H, I	No		Yes	9 Months
<u>SUBCHRONIC TESTING:</u>						
82-1 - 90-Day Feeding - Rodent and Nonrodent (Dog)	TGAI	A, B, C, D, E, F, G, H, I	No		No ^{2/}	
82-2 - 21-Day Dermal - Rabbit	TGAI	A, B, C, D, E, F, G, H, I	No		Yes	9 Months
82-3 - 90-Day Dermal - Rat	TGAI	A, B, C, D, E, F, G, H, I	No		No ^{3/}	
82-4 - 90-Day Inhalation - Rat	TGAI	A, B, C, D, E, F, G, H, I	No		Yes ^{4/}	15 Months
82-5 - 90-Day Neurotoxicity	TGAI	A, B, C, D, E, F, G, H, I	No		Reserved ^{5/}	

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.135 Toxicology (continued)</u>						
<u>CHRONIC TESTING:</u>						
83-1 - Chronic Toxicity - Rodent	TGAI	A,B,C,D,E, F,G,H,I	No		Yes ^{6/}	50 Months ^{7/} - (12 Months - Progress Report)
	Malaoxon	A,B,C,D,E, F,G,H,I	No		Yes ^{8/}	50 Months ^{7/} - (12 Months - Progress Report)
83-1 - Chronic Toxicity - Non-Rodent	TGAI	A,B,C,D,E, F,G,H,I	No		Yes ^{9/}	50 Months ^{7/} - (12 Months - Progress Report)
83-2 - Oncogenicity - Rat	TGAI	A,B,C,D,E, F,G,H,I	Yes	00043268, 00043269 00110562	Yes ^{10/}	12 Months
83-2 - Oncogenicity - Rat	Malaoxon	A,B,C,D,E, F,G,H,I	No		Yes ^{11/}	50 Months ^{7/} - (12 Months - Progress Report)
83-2 - Oncogenicity - Mouse	TGAI	A,B,C,D,E, F,G,H,I	No		Yes	50 Months ^{7/} - (12 Months - Progress Report)
	Malaoxon	A,B,C,D,E, F,G,H,I	Yes	00043270	No	

TABLE A

GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>§158.135 Toxicology (continued)</u>						
83-3 - Teratogenicity - Rat	TGAI	A,B,C,D,E, F,G,H,I	No		Yes	15 Months
83-3 - Teratogenicity - Rabbit	TGAI	A,B,C,D,E, F,G,H,I	Yes	00152569	No	
83-4 - Reproduction - Rat 2-generation	TGAI	A,B,C,D,E, F,G,H,I	No		Yes	39 Months ^{7/} (12 Months- Progress Report)
<u>MUTAGENICITY TESTING:</u>						
84-2 - Gene Mutation	TGAI	A,B,C,D,E, F,G,H,I	No		Yes	9 Months
84-3 - Structural Chromosomal	TGAI	A,B,C,D,E, F,G,H,I	No		Yes	12 Months
84-4 - Other Genotoxic Effects	TGAI	A,B,C,D,E, F,G,H,I	No		Yes	12 Months
<u>SPECIAL TESTING:</u>						
85-1 - General Metabolism	PAI or PAIRA	A,B,C,D,E, F,G,H,I	No		Yes	24 Months ^{7/} (12 Months - Progress Report)
85-2 - Domestic Animal Safety Testing	TGAI	A	No		Yes	15 Months ^{12/} (Protocol - 90 Days)

TABLE A

GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>\$158.135 Toxicology (continued)</u>						
<u>1/</u>	Due dates refer to the number of months following receipt of the Registration Standard by the registrant, unless otherwise indicated.					
<u>2/</u>	These studies are not required since requirements for chronic rodent and non-rodent toxicity studies have been imposed.					
<u>3/</u>	The present use patterns and toxicity characteristics of malathion do not trigger the need for this study.					
<u>4/</u>	This study is required because inhalation exposure may occur from use of malathion indoors.					
<u>5/</u>	This study is required via this Standard pending results of the delayed neurotoxicity study. If the results show neuropathy or neurotoxicity, the Agency will request that a 90-day neurotoxicity study be submitted.					
<u>6/</u>	A chronic feeding study is required in the F344 rat using malathion. It is suggested that the study be conducted as a combined chronic/oncogenicity study.					
<u>7/</u>	A progress report is due 12 months from receipt of the Standard. Progress reports are due annually thereafter.					
<u>8/</u>	A chronic toxicity study is required using malaaxon. This study may be performed as a combined chronic/oncogenicity study. It is suggested that the study be performed in the F344 rat.					
<u>9/</u>	This study was originally required under an Agency 1984 Data Call-In. A study was submitted to the Agency and determined to be unacceptable. A new chronic dog feeding study is required.					
<u>10/</u>	Acceptable oncogenicity studies have been performed in the Osborne-Mendel rat and Fischer 344 rat. Because of concerns regarding the preparation of slides, pathology diagnoses and presentation of results in the Sprague-Dawley rat study, an independent reevaluation of the microscopic slides is required. These must include all doses and both sexes for the following tissues: liver, lung, kidney, pituitary, spleen, lymph nodes, mammary gland, skin/ear, pancreas, thyroid, and heart. The reevaluation must include a grading of the severity of identified changes. The slides must be reread blind, without prior knowledge of dose level.					
<u>11/</u>	An oncogenicity study is required using malaaxon. This study can be performed as a combined chronic/oncogenicity study. It is suggested that the study be performed in the F344 rat.					
<u>12/</u>	A study is required to determine the effects of malathion on poultry when fed feed comprised of grain dust (wheat, rice, soybeans and sorghum) containing residues of malathion.					

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission ^{1/}
<u>\$158.145 Wildlife and Aquatic Organisms</u>						
<u>AVIAN AND MAMMALIAN TESTING:</u>						
71-1 - Acute Avian Oral Toxicity	TGAI	A,B,C,D,E,F, G,H,I	Yes	00022923 40094601	No	
71-2 - Avian Subacute Dietary						
- Upland Game Bird	TGAI	A,B,C,D,E, F,G,H,I	Yes	00022923	No	
- Waterfowl	TGAI	A,B,C,D,E, F,G,H,I	Yes	00022923	No	
71-3 - Wild Mammal Toxicity	TGAI	N/A				
71-4 - Avian Reproduction Upland Game Bird	TGAI	A,B,C,D, G,H	No		Yes ^{2/}	24 Months (12 Months - Progress Report)
71-5 - Simulated Field Testing and Actual Field Testing - Mammals and Birds	TEP	A,B,C,D, G,H	Partially	00113233	Reserved ^{3/}	
72-1 - Freshwater Fish Toxicity						
- Coldwater Species	TGAI	B,D,C,D,E, F,G,H,I	Yes	40094602	No	
	TEP	A,B,C,D, G,H	Yes	40378301	No	

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission
<u>\$158.145 Wildlife and Aquatic Organisms (continued)</u>						
- Warmwater Species	TGAI	B, D, C, D, E, F, G, H, I	Yes	40094602	No	
	TEP	A, B, C, D, G, H	Yes	40378301	No	
<u>AQUATIC ORGANISM TESTING:</u>						
72-2 - Acute Toxicity to Freshwater Invertebrates	TGAI	A, B, C, D, E, F, G, H, I	Yes	40094602	No	
	TEP	A, B, C, D, G, H	No		Yes ₄ /	9 Months
72-3 - Acute Toxicity to Estuarine and Marine Organisms	TGAI	A, B, C, D, G, H	No		Yes	12 Months
a. Shrimp	TEP	A, B, C, D	Yes	40398901	No	
	TGAI	A, B, C, D, G, H	Yes	40228401	No	
b. Oyster	TEP	A, B, C, D	No		Yes ₄ /	12 Months
	TGAI	A, B, C, D, G, H	No		Yes	12 Months
c. Fish	TEP	A, B, C, D	No		Yes ₄ /	12 Months

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission
<u>§158.145 Wildlife and Aquatic Organisms (continued)</u>						
72-4 - Fish Early Life Stage and Aquatic Invertebrate Life Cycle	TGAI	A, B, C, D, G, H, <u>I</u>	No		Yes	15 Months
72-5 - Fish Full Life-Cycle (Freshwater Species and Estuarine/Marine Species)	TGAI	A, B, C, D, G	No		Reserved ^{6/}	
72-6 - Aquatic Organism Accumulation	TGAI, PAI or Degradation Product	A, B, C, D, G	No		Reserved ^{7/}	
72-7 - Simulated Field Testing and Actual Field Testing -Aquatic Organisms	TEP	A, B, C, D, G	Partially	00058747, 00092217, 00092220, 00102372, 00105364, 00113198	Reserved ^{8/}	

1/ Due dates refer to the number of months following receipt of this Registration Standard by the registrant, unless otherwise indicated.

2/ This study is required because malathion formulations allow repeat formulations.

3/ This study is required pending receipt and evaluation of environmental fate data and the avian reproduction study.

4/ Data must be derived from typical end-use products of the type used (i.e., emulsifiable concentrate with 50-60% active ingredient).

5/ Required registrations of those formulations applied to livestock as the treated livestock may move into waterways.

6/ This study is required pending receipt and evaluation of lower tier testing.

7/ This study is required pending receipt and evaluation of the environmental fate data.

8/ This study is required pending receipt and evaluation of the lower tier aquatic studies and environmental fate data.

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission 1/
<u>\$158.155 Nontarget Insect</u>						
<u>NONTARGET INSECT TESTING - POLLINATORS:</u>						
141-1 - Honey Bee Acute Contact LD50	TGAI	A,B,G,H	Yes	00001999, 00162751	No	
141-2 - Honey Bee - Toxicity of Residues on Foliage	TEP	A,B,G,H	No		Yes ^{2/}	15 Months
141-4 - Honey Bee Subacute Feeding Study	Reserved ^{3/}					
141-5 - Field Testing for Pollinators	TEP	A,B,G,H	No		Reserved ^{4/}	
<u>NONTARGET INSECT TESTING - AQUATIC INSECTS:</u>						
142-1 - Acute Toxicity to Aquatic Insects	Reserved ^{5/}					
142-2 - Aquatic Insect Life Cycle Study	Reserved ^{5/}					
142-3 - Simulated or Actual Field Testing for Aquatic Insects	Reserved ^{5/}					
143-1 - NONTARGET INSECT TESTING- thru PREDATORS AND PARASITES 143-3	Reserved ^{5/}					

TABLE A
GENERIC DATA REQUIREMENTS FOR MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation	Must Additional Data be Submitted?	Timeframe for Submission 1/
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§158.155 Nontarget Insect (continued)

- 1/ Due dates refer to the number of months following receipt of this Registration Standard by the registrant, unless otherwise indicated.
- 2/ As data from the acute toxicity study indicate a high toxicity, residual toxicity data are required.
- 3/ Reserved pending development of test methodology.
- 4/ Reserved pending results of the residual bee toxicity study.
- 5/ Reserved pending Agency decision as to whether data requirement should be established.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MALATHION

Data Requirement	Test ¹ / Substance	Use Patterns	Does EPA Have Data? ² / Citation <u> </u>	Bibliographic Citation <u>2</u> / Citation <u> </u>	Must Additional Data be Submitted?	Timeframe for Submission ³ /
<u>\$158.120 Product Chemistry</u>						
<u>Product Identity:</u>						
61-1 - Product Identity and Disclosure of Ingredients	MP	All			Yes	9 Months
61-2 - Description of Beginning Materials and Manufacturing Process	MP	All			Yes	9 Months
61-3 - Discussion of Formation of Impurities	MP	All			Yes	9 Months
<u>Analysis and Certification of Product Ingredients:</u>						
62-1 - Preliminary Analysis	MP	All			Yes	12 Months
62-2 - Certification of Limits	MP	All			Yes	12 Months
62-3- Analytical Methods to Verify Certified Limit	MP	All			Yes	12 Months
<u>Physical And Chemical Characteristics:</u>						
63-2 - Color	MP	All			Yes	9 Months
63-3 - Physical State	MP	All			Yes	9 Months
63-4 - Odor	MP	All			Yes	9 Months

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MALATHION

Data Requirement	Test ¹ / Substance	Use Patterns	Does EPA Have Data? ² / Citation	Bibliographic Citation ² / Citation	Must Additional Data be Submitted?	Timeframe for Submission ³ / Submission
<u>\$158.120 Product Chemistry (continued)</u>						
<u>Physical and Chemical Characteristics</u> (continued)						
63-7 - Density, Bulk Density, or Specific Gravity	MP	All			Yes	9 Months
63-12 - pH	MP	All			Yes	9 Months
63-14 - Oxidizing or Reducing Action	MP	All			Yes	9 Months
63-15 - Flammability	MP	All			Yes	9 Months
63-16 - Explodability	MP	All			Yes	9 Months
63-17 - Storage Stability	MP	All			Yes	15 Months (8 Months - Progress Report)
63-18 - Viscosity	MP	All			Yes	15 Months (8 Months - Progress Report)
63-19 - Miscibility	MP	All			Yes	9 Months
63-20 - Corrosion Characteristics	MP	All			Yes	15 Months (8 Months - Progress Report)
<u>Other Requirements:</u>						
64-1 - Submittal of Samples	MP	All			Reserved ⁴ / Reserved	

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MALATHION

Data Requirement	Test ^{1/} Substance	Use Patterns	Does EPA Have Data?	Bibliographic Citation ^{2/}	Must Additional Data be Submitted?	Time frame for Submission ^{3/}
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§158.120 Product Chemistry (continued)

- 1/ Formulation intermediates are also included in the category of manufacturing-use products.
- 2/ Although product chemistry data may have been submitted in the past, the Agency has determined that these data must be resubmitted for each manufacturing-use product. New requirements have been introduced and previously submitted data must be updated. Therefore, bibliographic citations for the old data are not applicable.
- 3/ Due dates refer to the number of months following receipt of this Registration Standard by the registrant, unless otherwise indicated.
- 4/ These data are not required. When submittal of samples becomes necessary, the Agency will request them from the registrant.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MALATHION

Data Requirement	Test Substance	Use Patterns	Does EPA Have Data? ^{1/}	Bibliographic Citation ^{1/}	Must Additional Data be Submitted?	Timeframe for Submission ^{2/}
<u>ACUTE TESTING:</u>						
81-1 - Acute Oral Toxicity - Rat	MP ^{3/}	A, B, C, D, E, F, G, H, I			Yes	9 Months
81-2 - Acute Dermal Toxicity - Rabbit	MP	A, B, C, D, E, F, G, H, I			Yes	9 Months
81-3 - Acute Inhalation Toxicity - Rat	MP	A, B, C, D, E, F, G, H, I			Yes	9 Months
81-4 - Primary Eye Irritation - Rabbit	MP	A, B, C, D, E, F, G, H, I			Yes	9 Months
81-5 - Primary Dermal Irritation - Rabbit	MP	A, B, C, D, E, F, G, H, I			Yes	9 Months
81-6 - Dermal Sensitization - Guinea Pig	MP	A, B, C, D, E, F, G, H, I			Yes	9 Months

^{1/} Although acute toxicology data may have been submitted in the past, the Agency has determined that these data must be resubmitted for each pesticide. New requirements have been introduced and previously submitted data must be updated. Therefore, bibliographic citations for the old data are not applicable.

^{2/} Due dates refer to the number of months following receipt of this Registration Standard by the registrant, unless otherwise indicated.

^{3/} Formulation intermediates are also included in the category of manufacturing-use products.

II. LABELING APPENDICES

SUMMARY-1

LABEL CONTENTS

40 CFR 162.10 requires that certain specific labeling statements appear at certain locations on the label. This is referred to as format labeling. Specific label items listed below are keyed to the table at the end of this Appendix.

Item 1. PRODUCT NAME - The name, brand or trademark is required to be located on the front panel, preferably centered in the upper part of the panel. The name of a product will not be accepted if it is false or misleading.

Item 2. COMPANY NAME AND ADDRESS - The name and address of the registrant or distributor is required on the label. The name and address should preferably be located at the bottom of the front panel or at the end of the label text.

Item 3. NET CONTENTS - A net contents statement is required on all labels or on the container of the pesticide. The preferred location is the bottom of the front panel immediately above the company name and address, or at the end of the label text. The net contents must be expressed in the largest suitable unit, e.g., "1 pound 10 ounces" rather than "26 ounces." In addition to English units, net contents may be expressed in metric units. [40 CFR 162.10(d)]

Item 4. EPA REGISTRATION NUMBER - The registration number assigned to the pesticide product must appear on the label, preceded by the phrase "EPA Registration No.," or "EPA Reg. No." The registration number must be set in type of a size and style similar to other print on that part of the label on which it appears and must run parallel to it. The registration number and the required identifying phrase must not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency. [40 CFR 162.10(e)]

Item 5. EPA ESTABLISHMENT NUMBER - The EPA establishment number, preceded by the phrase "EPA Est." is the final establishment at which the product was produced, and may appear in any suitable location on the label or immediate container. It must also appear on the wrapper or outside container of the package if the EPA establishment number on the immediate container cannot be clearly read through such wrapper or container. [40 CFR 162.10(f)]

Item 6A. INGREDIENTS STATEMENT - An ingredients statement is required on the front panel. The ingredients statement must contain the name and percentage by weight of each active ingredient and the total percentage by weight of all inert ingredients. The preferred location is immediately below the product name. The ingredients statement must run parallel with, and be clearly distinguished from, other text on the panel. It must not be placed in the body of other text. [40 CFR 162.10(g)]

SUMMARY-2

Item 6B. POUNDS PER GALLON STATEMENT - For liquid agricultural formulations, the pounds per gallon of active ingredient must be indicated on the label.

Item 7. FRONT LABEL PRECAUTIONARY STATEMENTS - Front panel precautionary statements must be grouped together, preferably within a block outline. The table below shows the minimum type size requirements for various size labels.

<u>Size of Label on Front Panel in Square Inches</u>	<u>Signal Word Minimum Type Size All Capitals</u>	<u>"Keep Out of Reach of Children" Minimum Type Size</u>
5 and under	6 point	6 point
above 5 to 10	10 point	6 point
above 10 to 15	12 point	8 point
above 15 to 30	14 point	10 point
over 30	18 point	12 point

Item 7A. CHILD HAZARD WARNING STATEMENT - The statement "Keep Out of Reach of Children" must be located on the front panel above the signal word except where contact with children during distribution or use is unlikely. [40 CFR 162.10(h)(1)(ii)]

Item 7B. SIGNAL WORD - The signal word (DANGER, WARNING, or CAUTION) is required on the front panel immediately below the child hazard warning statement. [40 CFR 162.10 (h)(1)(i)]

Item 7C. SKULL & CROSSBONES AND WORD "POISON" - On products assigned a toxicity Category I on the basis of oral, dermal, or inhalation toxicity, the word "Poison" shall appear on the label in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word POISON. [40 CFR 162.10(h)(1)(i)]

Item 7D. STATEMENT OF PRACTICAL TREATMENT - A statement of practical treatment (first aid or other) shall appear on the label of pesticide products in toxicity Categories I, II, and III. [40 CFR 162.10(h)(1)(iii)]

Item 7E. REFERRAL STATEMENT - The statement "See Side (or Back) Panel for Additional Precautionary Statements" is required on the front panel for all products, unless all required precautionary statements appear on the front panel. [40 CFR 162.10(h)(1)(iii)]

Item 8. SIDE/BACK PANEL PRECAUTIONARY LABELING - The precautionary statements listed below must appear together on the label under the heading "PRECAUTIONARY STATEMENTS." The preferred location is at the top of the side or back panel preceding the directions for use, and it is preferred that these statements be surrounded by a block outline. Each of the three hazard warning statements must be headed by the appropriate hazard title. [40 CFR 162.10(h)(2)].

SUMMARY-3

Item 8A. HAZARD TO HUMANS AND DOMESTIC ANIMALS - Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. [40 CFR 162.10(h)(2)(i)]

Item 8B. ENVIRONMENTAL HAZARD - Where a hazard exists to non-target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury, or damage. [40 CFR 162.10(h)(2)(ii)]

Item 8C. PHYSICAL OR CHEMICAL HAZARD - FLAMMABILITY
Precautionary statements relating to flammability of a product are required to appear on the label if it meets the criteria in the PHYS/CHEM Labeling Appendix. The requirement is based on the results of the flashpoint determinations and flame extension tests required to be submitted for all products. These statements are to be located in the side/back panel precautionary statements section, preceded by the heading "Physical/Chemical Hazards." Note that no signal word is used in conjunction with the flammability statements.

Item 9A. RESTRICTED USE CLASSIFICATION - FIFRA sec. 3(d) requires that all pesticide formulations/uses be classified for either general or restricted use. Products classified for restricted use may be limited to use by certified applicators or persons under their direct supervision (or may be subject to other restrictions that may be imposed by regulation).

In the Registration Standard, the Agency has (1) indicated certain formulations/uses are to be restricted (Section IV indicates why the product has been classified for restricted use); or (2) reserved any classification decision until appropriate data are submitted.

The Regulatory Position and Rationale states whether products containing this active ingredient are classified for restricted use. If they are restricted the draft label(s) submitted to the Agency as part of your application must reflect this determination (see below).

If you do not believe that your product should be classified for restricted use, you must submit any information and rationale with your application for reregistration. During the Agency's review of your application, your proposed classification determination will be evaluated in accordance with the provisions of 40 CFR 162.11(c). You will be notified of the Agency's classification decision.

SUMMARY-4

Classification Labeling Requirements

If your product has been classified for restricted use, the following label requirements apply:

1. All uses restricted.

a. The statement "Restricted Use Pesticide" must appear at the top of the front panel of the label. The statement must be set in type of the same minimum size as required for human hazard signal word (see table in 40 CFR 162.10(h)(1)(iv))

b. Directly below this statement on the front panel, a summary statement of the terms of restriction must appear (including the reasons for restriction if specified in Section I). If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification."

2. Some but not all uses restricted. If the Regulatory Position and Rationale states that some uses are classified for restricted use, and some are unclassified, several courses of action are available:

a. You may label the product for Restricted use. If you do so, you may include on the label uses that are unrestricted, but you may not distinguish them on the label as being unrestricted.

b. You may delete all restricted uses from your label and submit draft labeling bearing only unrestricted uses.

c. You may "split" your registration, i.e., register two separate products with identical formulations, one bearing only unrestricted uses, and the other bearing restricted uses. To do so, submit two applications for reregistration, each containing all forms and necessary labels. Both applications should be submitted simultaneously. Note that the products will be assigned separate registration numbers.

Item 9B. MISUSE STATEMENT - All products must bear the misuse statement, "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." This statement appears at the beginning of the directions for use, directly beneath the heading of that section.

SUMMARY-5

Item 10A. REENTRY STATEMENT - If a reentry interval has been established by the Agency, it must be included on the label. Additional worker protection statements may be required in accordance with PR Notice 83-2, March 29, 1983.

Item 10B. STORAGE AND DISPOSAL BLOCK - All labels are required to bear storage and disposal statements. These statements are developed for specific containers, sizes, and chemical content. These instructions must be grouped and appear under the heading "Storage and Disposal" in the directions for use. This heading must be set in the same type sizes as required for the child hazard warning. Refer to Appendix II, STOR, PEST/DIS, and CONT/DIS to determine the storage and disposal instructions appropriate for your products.

Item 10C. DIRECTIONS FOR USE - Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment.
[40 CFR 162.10]

COLLATERAL LABELING

Bulletins, leaflets, circulars, brochures, data sheets, flyers, or other written or graphic printed matter which is referred to on the label or which is to accompany the product are termed collateral labeling. Such labeling may not bear claims or representations that differ in substance from those accepted in connection with registration of the product. It should be made part of the response to this notice and submitted for review.

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PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS
& DOMESTIC ANIMALS

CAUTION

ENVIRONMENTAL HAZARDS

PHYSICAL OR CHEMICAL
HAZARDS

DIRECTIONS FOR USE

It is a violation of Federal law to use
this product in a manner inconsistent
with its labeling.

RE-ENTRY STATEMENT
(If Applicable)

CROP: _____

CROP: _____

CROP: _____

STORAGE AND
DISPOSAL

STORAGE _____

DISPOSAL _____

WARRANTY STATEMENT

PRODUCT
NAME

ACTIVE INGREDIENT: _____ %

INERT INGREDIENTS: _____ %

TOTAL: _____ 100.00 %

THIS PRODUCT CONTAINS _____ LBS OF _____ PER GALLON

KEEP OUT OF REACH OF CHILDREN

CAUTION

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED _____

IF INHALED _____

IF ON SKIN _____

IF IN EYES _____

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

MFG BY _____

TOWN, STATE _____

ESTABLISHMENT NO. _____

EPA REGISTRATION NO. _____

NET CONTENTS _____

SUMMARY-6

LABELING REQUIREMENTS OF THE FIFRA, AS AMENDED

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
1	Product name	All products	Front panel	Center front panel	
2	Company name and address	All products	None	Bottom front panel or end of label text	If registrant is not the producer, must be qualified by "Packed for . . .," "Distributed by . . .," etc.
3	Net contents	All products	None	Bottom front panel or end of label text	May be in metric units in addition to U.S. units
4	EPA Reg. No.	All products	None	Front panel	Must be in similar type size and run parallel to other type.
5	EPA Est. No.	All products	None	Front panel, immediately before or following Reg. No.	May appear on the container instead of the label.
6A	Ingredients statement	All products	Front panel	Immediately following product name	Text must run parallel with other text on the panel.
6B	Pounds/gallon statement	Liquid products where dosage given as lbs. ai/unit area	Front panel	Directly below the main ingredients statement	
7	Front panel precautionary statements	All products	Front panel		All front panel precautionary statements must be grouped together, preferably blocked.
7A	Keep Out of Reach of Children (Child hazard warning)	All products	Front panel	Above signal word	Note type size requirements.
7B	Signal word	All products	Front panel	Immediately below child hazard warning	Note type size requirements.

SUMMARY-7

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
7C	Skull & cross-bones and word POISON (in red)	All products which are Category I based on oral, dermal, or inhalation toxicity	Front panel	Both in close proximity to signal word	
7D	Statement of Practical Treatment or First Aid	All products in Categories I, II, and III	Category I: Front panel unless referral statement is used. Others: Grouped with side panel precautionary statements.	Front panel for all.	
7E	Referral statement	All products where precautionary labeling appears on other than front panel.	Front panel		
8	Side/back panel precautionary statements	All products	None	Top or side of back panel preceding directions for use	Must be grouped under the headings in 8A, 8B, and 8C; preferably blocked.
8A	Hazards to humans and domestic animals	All products in Categories I, II, and III	None	Same as above	Must be preceded by appropriate signal word.
8B	Environmental hazards	All products	None	Same as above	Environmental hazards include bee caution where applicable.

SUMMARY-8

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
8C	Physical or chemical hazards	All pressurized products, others with flash points under 150°F	None	Same as above	Refer to Appendix II guide PHYS/CHEM
9A	Restricted block	All restricted products	Top center of front panel	Preferably blocked	Includes a statement of the terms of restriction. The words "RESTRICTED USE PESTICIDE" must be same type size as signal word.
9B	Misuse statement	All products	Immediately following of heading of directions for use		Required statement is: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."
10A	Reentry statement	PR Notice 83-2 or as determined by the Agency	In the directions for use	Immediately after misuse statement	
10B	Storage and disposal block	All products	In the directions for use	Immediately before specific directions for use or at the end of directions for use	Must be set apart and clearly distinguishable from other directions for use. Refer to Appendix II guides STOR, CONT/DIS, and PEST/DIS for further information and required statements.
10C	Directions for use	All products	None	None	May be in metric as well as U.S. units

cant obtained the data from another firm (identify); applicant copied data from a publication; applicant obtained a copy of the data from EPA).

(d) The applicant shall submit with his application a statement that EPA, in its evaluation of the properties, efficacy, and safety of the formulated end-use product, may not consider any data as supporting the application, except the following data:

(1) The data the applicant has submitted to EPA under paragraph (b) of this section;

(2) Other data pertaining to the safety of the product's active ingredients, rather than to the safety of the end-use product; and

(3) Existing tolerances, food additive regulations, exemptions, and other clearances issued under the Federal Food, Drug, and Cosmetic Act.

(e) If the applicant knows that any item of data he submitted under this section was generated by (or at the expense of) another person who originally submitted the data to EPA (or its predecessor, USDA) on or after January 1, 1970, to support an application for registration, experimental use permit, or amendment adding a new use to an existing registration, or for reregistration (unless the applicant and the original data submitter have reached written agreement on the amount and the terms of payment of any compensation that may be payable under FIFRA section 3(c)(1)(D)(ii) with regard to approval of the application), the applicant shall submit to EPA a statement that he has furnished to each such identified original data submitter:

(1) A notification of the applicant's intent to apply for registration, including the proposed product name;

(2) An offer to pay the person compensation, with regard to the approval of the application, to the extent required by FIFRA sections 3(c)(1)(D) and 3(c)(2)(D);

(3) An identification of the item(s) of data to which the offer applies;

(4) An offer to commence negotiations to ascertain the amount and terms of compensation to be paid; and

(5) The applicant's name, address, and telephone number.

(f) If the applicant's product contains any active ingredient other than those that are present solely because of the incorporation into the product, during formulation, of one or more other registered pesticide products purchased from another producer, then the applicant shall also comply with § 162.5 as to such active ingredient, and the application shall contain an acknowledgment that for purposes of FIFRA section 3(c)(1)(D) the application relies on (and any resulting registration should be regarded as if it were based on the Administrator's consideration of) the following data:

(1) All data submitted or specifically cited by the applicant in support of the registration; and

(2) Each other item of data in the Agency's files which:

(i) Concerns the properties or effects of any such active ingredient; and

(ii) Is one of the types of data that EPA would require to be submitted for scientific review by EPA if the applicant sought the initial registration under FIFRA Section 3(c)(1) of a product with composition and intended uses identical to those proposed for the applicant's product, under the data requirements in effect on the date EPA approves the applicant's present application.

(Secs. 3, 6, and 25 of FIFRA, as amended, U.S.C. 136 et seq.)

64 FR 27963, May 11, 1979)

§ 162.10 Labeling requirements.

(a) *General*—(1) *Contents of the label*. Every pesticide product shall bear a label containing the information specified by the Act and the regulations in this Part. The contents of a label must show clearly and prominently the following:

(i) The name, brand, or trademark under which the product is sold as prescribed in paragraph (b) of this section;

(ii) The name and address of the producer, registrant, or person for whom produced as prescribed in paragraph (c) of this section;

(iii) The net contents as prescribed in paragraph (d) of this section;

(iv) The product registration number as prescribed in paragraph (e) of this section;

(v) The producing establishment number as prescribed in paragraph (f) of this section;

(vi) An ingredient statement as prescribed in paragraph (g) of this section;

(vii) Warning or precautionary statements as prescribed in paragraph (h) of this section;

(viii) The directions for use as prescribed in paragraph (i) of this section; and

(ix) The use classification(s) as prescribed in paragraph (j) of this section.

(2) *Prominence and legibility.* (i) All words, statements, graphic representations, designs or other information required on the labeling by the Act or the regulations in this part must be clearly legible to a person with normal vision, and must be placed with such conspicuousness (as compared with other words, statements, designs, or graphic matter on the labeling) and expressed in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

(ii) All required label text must:

(A) Be set in 6-point or larger type;

(B) Appear on a clear contrasting background; and

(C) Not be obscured or crowded.

(3) *Language to be used.* All required label or labeling text shall appear in the English language. However, the Agency may require or the applicant may propose additional text in other languages as is considered necessary to protect the public. When additional text in another language is necessary, all labeling requirements will be applied equally to both the English and other language versions of the labeling.

(4) *Placement of Label.*—(i) *General.* The label shall appear on or be securely attached to the immediate container of the pesticide product. For purposes of this Section, and the branding provisions of the Act, "securely attached" shall mean that a label can reasonably be expected to remain affixed during the foreseeable conditions and period of use. If the immediate container is enclosed within a

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wrapper or outside container through which the label cannot be clearly read, the label must also be securely attached to such outside wrapper or container, if it is a part of the package as customarily distributed or sold.

(ii) *Tank cars and other bulk containers.*—(A) *Transportation.* While a pesticide product is in transit, the appropriate provisions of 49 CFR Parts 170-199, concerning the transportation of hazardous materials, and specifically those provisions concerning the labeling, marking and placarding of hazardous materials and the vehicle carrying them, define the basic Federal requirements. In addition, when any registered pesticide product is transported in a tank car, tank truck or other mobile or portable bulk container, a copy of the accepted label must be attached to the shipping papers, and left with the consignee at the time of delivery.

(B) *Storage.* When pesticide products are stored in bulk containers, whether mobile or stationary, which remain in the custody of the user, a copy of the label of labeling, including all appropriate directions for use, shall be securely attached to the container in the immediate vicinity of the discharge control valve.

(5) *False or misleading statements.* Pursuant to section 2(q)(1)(A) of the Act, a pesticide or a device declared subject to the Act pursuant to § 162.18, is misbranded if its labeling is false or misleading in any particular including both pictorial and non-pictorial claims. Examples of statements or representations in the labeling which constitute misbranding include:

(i) A false or misleading statement concerning the composition of the product;

(ii) A false or misleading statement concerning the effectiveness of the product as a pesticide or device;

(iii) A false or misleading statement about the value of the product for purposes other than as a pesticide or device;

(iv) A false or misleading comparison with other pesticides or devices;

(v) Any statement directly or indirectly implying that the pesticide or device is recommended or endorsed by

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any agency of the Federal Government;

(vi) The name of a pesticide which contains two or more principal active ingredients if the name suggests one or more but not all such principal active ingredients even though the names of the other ingredients are stated elsewhere in the labeling;

(vii) A true statement used in such a way as to give a false or misleading impression to the purchaser;

(viii) Label disclaimers which negate or detract from labeling statements required under the Act and these regulations;

(ix) Claims as to the safety of the pesticide or its ingredients, including statements such as "safe," "nonpoisonous," "noninjurious," "harmless" or "nontoxic to humans and pets" with or without such a qualifying phrase as "when used as directed"; and

(x) Non-numerical and/or comparative statements on the safety of the product, including but not limited to:

(A) "Contains all natural ingredients";

(B) "Among the least toxic chemicals known";

(C) "Pollution approved";

as provided in paragraph (a)(9)(ii) of this section, final printed labeling must be submitted and accepted prior to registration. However, final printed labeling need not be submitted until draft label texts have been provisionally accepted by the Agency.

(ii) Clearly legible reproductions or photo reductions will be accepted for unusual labels such as those screened directly onto glass or metal containers or large bag or drum labels. Such reproductions must be of microfilm reproduction quality.

(b) *Name, brand, or trademark.* (1) The name, brand, or trademark under which the pesticide product is sold shall appear on the front panel of the label.

(2) No name, brand, or trademark may appear on the label which:

(i) Is false or misleading; or

(ii) Has not been approved by the Administrator through registration or supplemental registration as an additional name pursuant to § 162.6(b)(4).

(c) Name and address of producer, registrant, or person for whom produced. An unqualified name and address given on the label shall be considered as the name and address of the producer. If the registrant's name appears on the label and the registrant is not the producer, or if the name of the person for whom the pesticide was produced appears on the label, it must be qualified by appropriate wording such as "Packed for . . ." "Distributed by . . ." or "Sold by . . ." to show that the name is not that of the producer.

(d) *Net weight or measure of contents.* (1) The net weight or measure of content shall be exclusive of wrappers or other materials and shall be the average content unless explicitly stated as a minimum quantity.

(2) If the pesticide is a liquid, the net content statement shall be in terms of liquid measure at 68° F (20°C) and shall be expressed in conventional American units of fluid ounces, pints, quarts, and gallons.

(3) If the pesticide is solid or semisolid, viscous or pressurized, or is a mixture of liquid and solid, the net content statement shall be in terms of weight expressed as avoirdupois pounds and ounces.

(4) In all cases, net content shall be stated in terms of the largest suitable unit, i.e., "1 pound 10 ounces" rather than "26 ounces."

(5) In addition to the required units specified, net content may be expressed in metric units.

(6) Variation above minimum content or around an average is permissible only to the extent that it represents deviation unavoidable in good manufacturing practice. Variation below a stated minimum is not permitted. In no case shall the average content of the packages in a shipment fall below the stated average content.

(e) *Product registration number.* The registration number assigned to the pesticide product at the time of registration shall appear on the label, preceded by the phrase "EPA Registration No.," or the phrase "EPA Reg. No.," The registration number shall be set in type of a size and style similar to other print on that part of the label on which it appears and shall run par-

alied to it. The registration number and the required identifying phrase shall not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency.

(f) *Producing establishments registration number.* The producing establishment registration number preceded by the phrase "EPA Est." of the final establishment at which the product was produced may appear in any suitable location on the label or immediate container. It must appear on the wrapper or outside container of the package if the EPA establishment registration number on the immediate container cannot be clearly read through such wrapper or container.

(g) *Ingredient statement.*—(1) *General.* The label of each pesticide product must bear a statement which contains the name and percentage by weight of each active ingredient, the total percentage by weight of all inert ingredients; and if the pesticide contains an active ingredient, a statement of the percentage of total and water-soluble active ingredients as elemental arsenic. The active ingredients must be designated by the term "active ingredients" and the inert ingredients by the term "inert ingredients," or the singular forms of these terms when appropriate. Both terms shall be in the same type size, be aligned to the same margin and be equally prominent. The statement "inert ingredients, none" is not required for pesticides which contain 100 percent active ingredients. Unless the ingredient statement is a complete analysis of the pesticide, the term "analysis" shall not be used as a heading for the ingredient statement.

(2) *Position of ingredient statement.* (i) The ingredient statement is normally required on the front panel of the label. If there is an outside container or wrapper through which the ingredient statement cannot be clearly read, the ingredient statement must also appear on such outside container or wrapper. If the size or form of the package makes it impracticable to place the ingredient statement on the front panel of the label, permission may be granted for the ingredient statement to appear elsewhere.

(h) The text of the ingredient statement must run parallel with other text on the panel on which it appears, and must be clearly distinguishable from and must not be placed in the body of other text.

(3) *Names to be used in ingredient statement.* The name used for each ingredient shall be the accepted common name, if there is one, followed by the chemical name. The common name may be used alone only if it is well known. If no common name has been established, the chemical name alone shall be used. In no case will the use of a trademark or proprietary name be permitted unless such name has been accepted as a common name by the Administrator under the authority of Section 25(c)(6).

(4) *Statements of percentages.* The percentages of ingredients shall be stated in terms of weight-to-weight. The sum of percentages of the active and the inert ingredients shall be 100. Percentages shall not be expressed by a range of values such as "72-25%." If the uses of the pesticide product are expressed as weight of active ingredient per unit area, a statement of the weight of active ingredient per unit volume of the pesticide formulation shall also appear in the ingredient statement.

(5) *Accuracy of stated percentages.* The percentages given shall be as precise as possible reflecting good manufacturing practice. If there may be unavoidable variation between manufacturing batches, the value stated for each active ingredient shall be the lowest percentage which may be present.

(6) *Deterioration.* Pesticides which change in chemical composition significantly must meet the following labeling requirements: (i) In cases where it is determined that a pesticide formulation changes chemical composition significantly, the product must bear the following statement in a prominent position on the label: "Not for sale or use after [date]."

(ii) The product must meet all label claims up to the expiration time indicated on the label.

(7) *Inert ingredients.* The Administrator may require the name of any

inert ingredient(s) to be listed in the ingredient statement if he determines that such ingredient(s) may pose a hazard to man or the environment.

(h) *Warnings and precautionary statements.* Required warnings and precautionary statements concerning the general areas of toxicological hazard including hazard to children, environmental hazard, and physical or chemical hazard fall into two groups: those required on the front panel of the labeling and those which may

appear elsewhere. Specific requirements concerning content, placement, type size, and prominence are given below.

(i) *Required front panel statements.* With the exception of the child hazard warning statement, the text required on the front panel of the label is determined by the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown by any of the indicators in the table below.

Hazard indicators	Toxicity categories			
	I	II	III	IV
Oral LD ₅₀	Up to and including 50 mg/kg	From 50 to 500 mg/kg	From 500 to 2,000 mg/kg	Over 2,000 mg/kg
Inhalation LC ₅₀	Up to and including 2 mg/liter	From 2 to 20 mg/liter	From 20 to 200 mg/liter	Over 200 mg/liter
Dermal LD ₅₀	Up to and including 200 mg/kg	From 200 to 2,000 mg/kg	From 2,000 to 20,000 mg/kg	Over 20,000 mg/kg
Eye effects	Corneal opacity, reversible within 7 days	Corneal opacity, reversible within 7 days	No corneal opacity; irritation resolvable within 7 days	No irritation
Skin effects	Corrosion	Corrosion	Severe irritation at 72 hours	Moderate irritation at 72 hours

(i) *Human hazard signal word.*—(A) *Toxicity Category I.* All pesticide products meeting the criteria of Toxicity Category I shall bear on the front panel the signal word "Danger." In addition if the product was assigned to Toxicity Category I on the basis of its oral, inhalation or dermal toxicity (as distinct from skin and eye local effects) the word "Poison" shall appear in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word "poison."

(B) *Toxicity Category II.* All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word "Warning."

(C) *Toxicity Category III.* All pesticide products meeting the criteria of Toxicity Category III shall bear on the front panel the signal word "Caution."

(D) *Toxicity Category IV.* All pesticide products meeting the criteria of Toxicity Category IV shall bear on the front panel the signal word "Caution."

(E) *Use of signal words.* Use of any signal word(s) associated with a higher

Toxicity Category is not permitted except when the Agency determines that such labeling is necessary to prevent unreasonable adverse effects on man or the environment. In no case shall more than one human hazard signal word appear on the front panel of a label.

(ii) *Child hazard warning.* Every pesticide product label shall bear on the front panel the statement "Keep out of reach of children." Only in cases where the likelihood of contact with children during distribution, marketing, storage or use is demonstrated by the applicant to be extremely remote, or if the nature of the pesticide is such that it is approved for use on infants or small children, may the Administrator waive this requirement.

(iii) *Statement of practical treatment.*—(A) *Toxicity Category I.* A statement of practical treatment (first aid or other) shall appear on the front panel of the label of all pesticides falling into Toxicity Category I on the basis of oral, inhalation or dermal toxicity. The Agency may, however, permit reasonable variations in the placement of the statement of practical

cal treatment is some reference such as "See statement of practical treatment on back panel" appears on the front panel near the word "Poison" and the skull and crossbones.

(B) *Other toxicity categories.* The statement of practical treatment is not required on the front panel except as described in paragraph (h)(1)(iii)(A) of this section. The applicant may, however, include such a front panel statement at his option. Statements of practical treatment are, however, required elsewhere on the label in accordance with paragraph (h)(2) of this section if they do not appear on the front panel.

(iv) *Placement and prominence.* All the require front panel warning statements shall be grouped together on the label, and shall appear with sufficient prominence relative to other front panel text and graphic material to make them unlikely to be overlooked under customary conditions of purchase and use. The following table shows the minimum type size requirements for the front panel warning statements on various sizes of labels:

Size of label front panel in square inches	Points	
	Required type size in points	Type size of each of children
6 and under	6	6
Above 6 to 16	10	8
Above 16 to 36	12	10
Above 36 to 56	14	12
Over 56	16	14

(2) *Other required warnings and precautionary statements.* The warnings and precautionary statements as required below shall appear together on the label under the general heading "Precautionary Statements" and under appropriate subheadings of "Hazard to Humans and Domestic Animals," "Environmental Hazard," "Physical or Chemical Hazard."

(i) *Hazard to Humans and Domestic Animals (A)* Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, route(s) of exposure and the precaution(s) to be taken to avoid accident, injury or damage. The precautionary paragraph shall be immediately preceded by the appropriate hazard signal word.

(B) The following table depicts typical precautionary statements. These statements must be modified or expanded to reflect specific hazards.

Toxicity category	Precautionary statements by toxicity category	
	Oral, inhalation, or dermal toxicity	Skin and eye local effects
1	Read label carefully. Do not breathe vapor (fume or spray). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)	Caution. Causes eye and skin damage (or skin irritation). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)
2	Read label carefully. Do not breathe vapor (fume or spray). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)	Caution. Causes eye and skin damage (or skin irritation). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)
3	Read label carefully. Do not breathe vapor (fume or spray). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)	Caution. Causes eye and skin damage (or skin irritation). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)
4	Read label carefully. Do not breathe vapor (fume or spray). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)	Caution. Causes eye and skin damage (or skin irritation). Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Hazardous if swallowed. (Appropriate first aid statement required.)

(ii) *Environmental hazards.* Where a hazard exists to non target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident.

(iii) *Injury or damage.* Examples of the hazard statements and the circumstances under which they are required follow:

(A) If a pesticide intended for outdoor use contains an active ingredient with a mammalian acute oral LD_{50} of

Chapter I—Environmental Protection Agency

§ 162.10

100 or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(B) If a pesticide intended for outdoor use contains an active ingredient with a fish acute LC_{50} of 1 ppm or less, the statement "This Pesticide is Toxic to Fish" is required.

(C) If a pesticide intended for outdoor use contains an active ingredient with an avian acute oral LD_{50} of 100 mg/kg or less, or a subacute dietary LC_{50} of 500 ppm or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(D) If either accident history or field studies demonstrate that use of the pesticide may result in fatality to birds, fish or mammals, the statement

"This pesticide is extremely toxic to wildlife (fish)" is required.

(E) For uses involving foliar application to agricultural crops, forests, or shade trees, or for mosquito abatement treatments, pesticides toxic to pollinating insects must bear appropriate label cautions.

(F) For all outdoor uses other than aquatic applications the label must bear the caution "Keep out of lakes, ponds or streams. Do not contaminate water by cleaning of equipment or disposal of wastes."

(iii) *Physical or chemical hazards.* Warning statements on the flammability or explosive characteristics of the pesticide are required as follows:

Flash point	Precautionary Statements	
	(A) Flammable Containers	(B) Nonflammable Containers
Flash point at or below 20° F; if there is a flashback at any value opening	Extremely flammable. Containers under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate. Exposure to temperatures above 130° F may cause bursting.	Extremely flammable. Containers under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate. Exposure to temperatures above 130° F may cause bursting.
Flash point above 20° F and not over 60° F or if the flame extension is more than 18 in long at a distance of 6 in from the flame	Flammable. Containers under pressure. Keep away from heat, sparks, and open flames. Do not puncture or incinerate. Exposure to temperatures above 130° F may cause bursting.	Flammable. Containers under pressure. Keep away from heat, sparks, and open flames. Do not puncture or incinerate. Exposure to temperatures above 130° F may cause bursting.
All other nonpressurized containers	Flammable. Containers under pressure. Keep away from heat, sparks, and open flames. Do not puncture or incinerate. Exposure to temperatures above 130° F may cause bursting.	Flammable. Containers under pressure. Keep away from heat, sparks, and open flames. Do not puncture or incinerate. Exposure to temperatures above 130° F may cause bursting.
At or below 20° F	Extremely flammable. Keep away from fire, sparks, and heated surfaces.	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
Above 20° F and not over 60° F	Flammable. Keep away from heat and open flames.	Flammable. Keep away from heat and open flames.
Above 60° F and not over 150° F	Do not use or store near heat or open flames.	Do not use or store near heat or open flames.

(i) *Directions for Use—(1) General requirements—(a) Adequacy and clarity of directions.* Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment.

(b) *Placement of directions for use.* Directions may appear on any portion of the label provided that they are conspicuous enough to be easily read by the user of the pesticide product. Directions for use may appear on printed or graphic matter which accompanies the pesticide provided that:

(A) If required by the Agency, such printed or graphic matter is securely attached to each package of the pesticide, or placed within the outside wrapper or bag;

(B) The label bears a reference to the directions for use in accompanying leaflets or circulars, such as "See directions in the enclosed circular;" and

(C) The Administrator determines that it is not necessary for such directions to appear on the label.

(iii) *Exceptions to requirement for direction for use—(A)* Detailed directions for use may be omitted from labeling of pesticides which are intended for use only by manufacturers of products other than pesticide products, their regular manufacturing processes, provided that:

(1) The label clearly shows that the product is intended for use only in manufacturing processes and specifies the type(s) of products involved.

(2) Adequate information such as technical data sheets or bulletins, is available to the trade specifying the type of product involved and its proper use in manufacturing processes.

(3) The product will not come into the hands of the general public except after incorporation into finished products; and

(4) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment.

(B) Detailed directions for use may be omitted from the labeling of pesticide products for which sale is limited to physicians, veterinarians, or druggists, provided that:

(1) The label clearly states that the product is for use only by physicians or veterinarians;

(2) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment; and

(3) The product is also a drug and regulated under the provisions of the Federal Food, Drug and Cosmetic Act.

(C) Detailed directions for use may be omitted from the labeling of pesticide products which are intended for use only by formulators in preparing pesticides for sale to the public, provided that:

(1) There is information readily available to the formulators on the composition, toxicity, methods of use, applicable restrictions or limitations, and effectiveness of the product for pesticide purposes;

(2) The label clearly states that the product is intended for use only in manufacturing, formulating, mixing, or repacking for use as a pesticide and specifies the type(s) of pesticide products involved;

(3) The product as finally manufactured, formulated, mixed, or repacked is registered; and

(4) The Administrator determines that such directions are not necessary to prevent unreasonable adverse effects on man or the environment.

(3) Contents of Directions for Use. The directions for use shall include the following under the headings "Directions for Use":

(i) The statement of use classification as prescribed in § 162.10(j) immediately under the heading "Directions for Use."

(ii) Immediately below the statement of use classification, the statement "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."

(iii) The site(s) of application, as for example the crops, animals, areas, or objects to be treated.

(iv) The target pest(s) associated with each site.

(v) The dosage rate associated with each site and pest.

(vi) The method of application, including instructions for dilution, if required, and type(s) of application apparatus or equipment required.

(vii) The frequency and timing of applications necessary to obtain effective results without causing unreasonable adverse effects on the environment.

(viii) Specific limitations on reentry to areas where the pesticide has been applied, meeting the requirements concerning reentry provided by 40 CFR Part 170.

(ix) Specific directions concerning the storage and disposal of the pesticide and its container, meeting the requirements of 40 CFR Part 165. These instructions shall be grouped and appear under the heading "Storage and Disposal." This heading must be set in type of the same minimum size as required for the child hazard warning (See Table in § 162.10(h)(1)(iv)).

(x) Any limitations or restrictions on use required to prevent unreasonable adverse effects, such as:

(A) Required intervals between application and harvest of food or feed crops.

(B) Rotational crop restrictions.

(C) Warnings as required against use on certain crops, animals, objects, or in or adjacent to certain areas.

(D) (Reserved)

(E) For restricted use pesticides, a statement that the pesticide may be applied under the direct supervision of a certified applicator who is not physically present at the site of application

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but nonetheless available to the person applying the pesticide, unless the Agency has determined that the pesticide may only be applied under the direct supervision of a certified applicator who is physically present.

(F) Other pertinent information which the Administrator determines to be necessary for the protection of man and the environment.

(i) Statement of Use Classification. By October 22, 1976, all pesticide products must bear on their labels a statement of use classification as described in paragraphs (j)(1) and (2) of this section. Any pesticide product for which some uses are classified for general use and others for restricted use shall be separately labeled according to the labeling standards set forth in this subsection, and shall be marketed as separate products with different registration numbers, one bearing directions only for general use(s) and the other bearing directions for restricted use(s) except that, if a product has both restricted use(s) and general use(s), both of these uses may appear on a product labeled for restricted use. Such products shall be subject to the provisions of § 162.10(j)(2).

(ii) General Use Classification. Pesticide products bearing directions for use(s) classified general shall be labeled with the exact words "General Classification" immediately below the heading "Directions for Use." And reference to the general classification that suggests or implies that the general utility of the pesticide extends beyond those purposes and uses contained in the Directions for Use will be considered a false or misleading statement under the statutory definitions of misbranding.

(3) Restricted Use Classification. Pesticide products bearing directions for use(s) classified restricted shall bear statements of restricted use classification on the front panel as described below:

(i) Front panel statement of restricted use classification. (A) At the top of the front panel of the label, set in type of the same minimum size as required for human hazard signal words (see table in § 162.10(h)(1)(iv)), and appearing with sufficient prominence relative to other text and graphic material on

the front panel to make it unlikely to be overlooked under customary conditions of purchase and use, the statement "Restricted Use Pesticide" shall appear.

(B) Directly below this statement on the front panel, a summary statement of the terms of restriction imposed as a precondition to registration shall appear. If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification." If, however, other regulatory restrictions are imposed, the Administrator will define the appropriate wording for the terms of restriction by regulation.

(k) Advertising. (Reserved)

140 FR 25266, July 3, 1975; 40 FR 32329, Aug. 1, 1975; 40 FR 34671, Aug. 21, 1975, as amended at 43 FR 5786, Feb. 9, 1978)

§ 162.11 Criteria for determinations of unreasonable adverse effects.

(a) Criteria for Issuance of Notice of Intent to Deny Registration, Cancel Registration, or to Hold a Hearing

(1) Presumption. (i) A rebuttable presumption shall arise that a notice of intent to deny registration pursuant to section 3(c)(6) of the Act, a notice of intent to cancel registration pursuant to section 6(b)(1) of the Act, or a notice of intent to hold a hearing to determine whether the registration should be canceled or denied, as appropriate, shall be issued, upon a determination by the Administrator that the pesticide meets or exceeds any of the criteria for such action set forth in paragraph (a)(3) of this section. Upon such determination, the Administrator shall issue notice by certified mail to the applicant or registrant, as the case may be, stating that the applicant or registrant has the opportunity to submit evidence in rebuttal of such presumption in accordance with paragraph (a)(4) of this section. The applicant or registrant shall have forty-five (45) days from the date such notice is sent to submit evidence in rebuttal of the presumption; provided, however, that for good cause shown the Administrator may grant an additional sixty

PHYS/CHEM-1

PHYSICAL/CHEMICAL HAZARDS

Criteria

Required Label Statement

I. Pressurized Containers

- | | |
|---|---|
| A. Flashpoint at or below 20°F; or if there is a flashback at any valve opening. | Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| B. Flashpoint above 20°F and not over 80°F; or if the flame extension is more than 18 inches long at a distance of 6 inches from the valve opening. | Flammable. Contents under pressure. Keep away from heat, sparks, and flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| C. <u>All Other Pressurized Containers</u> | Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |

II. Non-Pressurized Containers

- | | |
|---|--|
| A. Flashpoint at or below 20°F. | Extremely flammable. Keep away from fire, sparks, and heated surfaces. |
| B. Flashpoint above 20°F and not over 80°F. | Flammable. Keep away from heat and open flame. |
| C. Flashpoint over 80°F and not over 150°F. | Do not use or store near heat and open flame. |
| D. Flashpoint above 150°F. | None required. |

PHYS/CHEM-1

PHYSICAL/CHEMICAL HAZARDS

Criteria

Required Label Statement

I. Pressurized Containers

- | | |
|---|---|
| A. Flashpoint at or below 20°F; or if there is a flashback at any valve opening. | Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| B. Flashpoint above 20°F and not over 80°F; or if the flame extension is more than 18 inches long at a distance of 6 inches from the valve opening. | Flammable. Contents under pressure. Keep away from heat, sparks, and flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |
| C. <u>All Other Pressurized Containers</u> | Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting. |

II. Non-Pressurized Containers

- | | |
|---|--|
| A. Flashpoint at or below 20°F. | Extremely flammable. Keep away from fire, sparks, and heated surfaces. |
| B. Flashpoint above 20°F and not over 80°F. | Flammable. Keep away from heat and open flame. |
| C. Flashpoint over 80°F and not over 150°F. | Do not use or store near heat and open flame. |
| D. Flashpoint above 150°F. | None required. |

STOR-1

STORAGE INSTRUCTIONS FOR PESTICIDES

Heading:

All products are required to bear specific label instructions about storage and disposal. Storage and disposal instructions must be grouped together in the directions for use portion of the label under the heading STORAGE AND DISPOSAL. Products intended solely for domestic use need not include the heading "STORAGE AND DISPOSAL."

Storage Instructions:

All product labels are required to have appropriate storage instructions. Specific storage instructions are not prescribed. Each registrant must develop his own storage instructions, considering, when applicable, the following factors:

1. Conditions of storage that might alter the composition or usefulness of the pesticide. Examples could be temperature extremes, excessive moisture or humidity, heat, sunlight, friction, or contaminating substances or media.
2. Physical requirements of storage which might adversely affect the container of the product and its ability to continue to function properly. Requirements might include positioning of the container in storage, storage or damage due to stacking, penetration of moisture, and ability to withstand shock or friction.
3. Specifications for handling the pesticide container, including movement of container within the storage area, proper opening and closing procedures (particularly for opened containers), and measures to minimize exposure while opening or closing container.
4. Instructions on what to do if the container is damaged in any way, or if the pesticide is leaking or has been spilled, and precautions to minimize exposure if damage occurs.
5. General precautions concerning locked storage, storage in original container only, and separation of pesticides during storage to prevent cross-contamination of other pesticides, fertilizer, food, and feed.
6. General storage instructions for household products should emphasize storage in original container and placement in locked storage areas.

CONT/DIS-1

CONTAINER DISPOSAL INSTRUCTIONS

The label of each product must bear container disposal instructions appropriate to the type of container.

1. Domestic use products must bear one of the following container disposal statements:

Container Type	Statement
Non-aerosol products (bottles, cans, jars)	Do not reuse container (bottle, can, jar). Rinse thoroughly before discarding in trash.
Non-aerosol products (bags)	Do not reuse bag. Discard bag in trash.
Aerosol products	Replace cap and discard containers in trash. Do not incinerate or puncture.

2. All other products must bear container disposal instructions, based on container type, listed below:

Container Type	Statement
Metal containers (non-aerosol)	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
Plastic containers	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.
Glass containers	Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures.
Fiber drums with liners	Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum is contaminated and cannot be reused ¹ , dispose of in the same manner.
Paper and plastic bags	Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.
Compressed gas cylinders	Return empty cylinder for reuse (or similar wording)

¹/ Manufacturer may replace this phrase with one indicating whether and how fiber drum may be reused.

PEST/DIS-1

PESTICIDE DISPOSAL INSTRUCTIONS

The label of all products, except those intended solely for domestic use, must bear explicit instructions about pesticide disposal. The statements listed below contain the exact wording that must appear on the label of these products:

1. The labels of all products, except domestic use, must contain the statement, "Do not contaminate water, food, or feed by storage or disposal."

2. Except those products intended solely for domestic use, the labels of all products that contain active ingredients that are Acute Hazardous Wastes (see list in this Appendix) or are assigned to Toxicity Category I on the basis of oral or dermal toxicity, skin or eye irritation potential, or Toxicity Category I or II on the basis of acute inhalation toxicity must bear the following pesticide disposal statement:

"Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

3. The labels of all products, except those intended for domestic use, containing active or inert ingredients that are Toxic Hazardous Wastes (see list in this Appendix) or meet any of the criteria in 40 CFR 261, Subpart C for a hazardous waste must bear the following pesticide disposal statement:

"Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

4. Labels for all other products, except those intended for domestic use, must bear the following pesticide disposal statement:

"Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility."

5. Products intended for domestic use only must bear the following disposal statement: "Securely wrap original container in several layers of newspaper and discard in trash."

III. USE INDEX APPENDIX

EPA Compendium of Acceptable Uses

MALATHION

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c057701

MALATHION*

TYPE PESTICIDE: Insecticide, Acaricide, Plant Growth Regulator, Tadpole Shrimp Control Agent

FORMULATIONS:

Tech (9.7 lb/gal, 90%, 95%, 97%)
 FI (4 lb/gal, 4.35 lb/gal, 5 lb/gal, 8 lb/gal, 0.2%, 1%, 1.429%, 1.43%, 1.66%, 1.67%, 2.062%, 2.5%, 2.63%, 5%, 6.25%, 8.86%, 10%, 14.3%, 16.67%, 20%, 24%, 25%, 26.67%, 27.36%, 30%, 35%, 40%, 44.7%, 50%, 57%, 78%, 80%, 90%, 95%)
 D (1%, 1.25%, 2%, 3%, 4%, 4.21%, 4.5%, 4.59%, 4.8%, 5%, 5.6%, 6%, 7.5%, 8%, 10%, 24%)
 G (1%, 1.2%, 2%, 6%, 10%)
 P/T (6.6%, 7.09%, 8.86%)
 WP (1.5%, 4%, 5%, 6%, 7.09%, 7.5%, 8%, 8.3%, 8.33%, 9.5%, 10%, 18.75%, 25%, 50%)
 WP/D (1%, 3%, 4%, 5%, 7.5%, 8%, 15%)
 Cr (1%)
 Impr (0.9%, 1.8%, 3%)
 EC (0.28 lb/gal, 1 lb/gal, 1.1 lb/gal, 1.15 lb/gal, 2 lb/gal, 4 lb/gal, 4.3 lb/gal, 4.33 lb/gal, 4.4 lb/gal, 4.5 lb/gal, 4.8 lb/gal, 5 lb/gal, 8 lb/gal, 8.39 lb/gal, 8.45 lb/gal, 9.33 lb/gal, 0.34%, 1%, 1.9%, 2%, 3.14%, 3.5%, 4.3%, 5%, 5.2%, 5.25%, 5.3%, 5.5%, 6%, 6.5%, 7%, 7.5%, 8%, 8.07%, 9.4%, 10%, 10.73%, 11.5%, 11.6%, 11.7%, 12%, 12.2%, 12.3%, 12.42%, 12.5%, 12.8%, 13%, 14.04%, 14.25%, 15%, 15.2%, 15.34%, 16%, 16.25%, 19%, 19.5%, 20%, 22.32%, 22.73%, 23%, 23.2%, 23.7%, 23.8%, 23.807%, 23.82%, 23.84%, 23.9%, 25%, 27%, 28%, 30%, 32.3%, 37.5%, 38%, 40%, 42.1%, 42.62%, 42.93%, 44.54%, 44.7%, 45.75%, 45.78%, 47%, 50%, 50.8%, 53%, 54.6%, 54.71%, 55%, 55.7%, 55.9%, 56%, 56.5%, 56.58%, 56.6%, 56.8%, 57%, 57.8%, 58%, 79.5%, 80%, 80.7%, 81.7%, 82%, 83%)
 FIC (0.75 lb/gal, 8 lb/gal, 8.55%, 34%)
 SC/L (4 lb/gal, 4.5 lb/gal, 6 lb/gal, 9.3 lb/gal, 9.33 lb/gal, 1%, 1.429%, 1.43%, 1.8%, 2%, 3%, 4%, 4.3%, 4.5%, 4.95%, 5%, 6%, 6.05%, 6.31%, 10%, 12%, 13%, 16.63%, 18%, 19.45%, 20%, 21.03%, 21.2%, 22.3%, 23.2%, 25%, 25.6%, 28.8%, 30%, 32.33%, 33%, 33.25%, 35.6%, 37.5%, 40%, 44%, 44.7%, 45.7%, 46.5%, 50%, 53%, 55.2%, 57%, 57.1%, 90%, 95%)
 RTU (4.1 lb/gal, 6 lb/gal, 8 lb/gal, 9.3 lb/gal, 9.33 lb/gal, 9.7 lb/gal, 9.79 lb/gal, 0.2%, 0.5%, 0.7%, 1%, 1.25%, 1.5%, 1.6%, 1.85%, 2%, 2.1%, 2.21%, 2.335%, 2.5%, 2.77%, 2.85%, 2.88%, 3%, 3.06%, 3.07%, 3.09%, 3.5%, 3.56%, 3.6%, 3.7%, 3.74%, 3.8%, 3.82%, 4%, 4.08%, 4.95%, 5%, 8.5%, 9%, 10%, 14%, 18.8%, 20.39%, 22.5%, 23.75%, 32.11%, 45.1%, 58.4%, 58.8%, 63.973%, 95%)

*Cythion

Chemathion

Malaspray

O,O-dimethyl dithiophosphate of diethyl mercaptosuccinate [S-(1,2-dicarbethoxyethyl) O,O-dimethyl] phosphorodithioate
 diethyl mercaptosuccinic acid, S-ester with O,O-dimethyl phosphorodithioate

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MALATHION

FORMULATIONS (continued)

PrL (0.2%, 0.25%, 0.3%, 0.4%, 0.5%, 0.95%, 1.5%, 2%, 3%, 4%, 10%, 20%)

GENERAL WARNINGS AND LIMITATIONS:

Environmental Hazards: Malathion is toxic to fish, aquatic invertebrates, and the aquatic life stages of amphibians. Do not apply directly to water or wetlands (i.e., swamps, bogs, marshes, and pot-holes). Drift and runoff may be hazardous to aquatic organisms in areas near the application site. Do not contaminate water by cleaning of equipment or disposal of wastes.

Do not apply malathion in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons. Do not enter treated areas without protective clothing until sprays have dried.

Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to the workers who are expected to be in a treated area or in an area to be treated with this product. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given in there is reason to believe that written warnings cannot be understood by workers. Written or oral warnings must include the following information: "CAUTION, Area to be treated with malathion (date of application). Do not enter without appropriate protective clothing until sprays have dried." Or in the case of citrus, grapes, nectarines and peaches, "Do not enter treated areas to perform activities that involve substantial or prolonged contact with treated foliage for 1 day."

Diluents: Emulsifiable concentrate formulations may be diluted with water or oil. Dilute soluble concentrate formulations with appropriate oil-based solvents such as diesel oil or kerosene and other odorless petroleum solvents. When using pressurized liquid formulations, hold container only in upright position to spray. Shake well before using and hold container 6 to 12 inches from surface.

Bee Caution:

Malathion is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply malathion or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Agricultural Crop Tolerances (other than those listed in the text):

Birdsfoot Trefoil, forage	135 ppm
Birdsfoot Trefoil, hay	135 ppm
Cranberries	8 ppm
Lentils	8 ppm
Macadamia Nuts	1 ppm
Quinces	8 ppm

Definition of Terms:

MAI - Multiple active ingredient(s)

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MALATHION

GENERAL WARNINGS AND LIMITATIONS (continued)

- * Tablespoons actual - A hypothetical quantity computed by multiplying the number (or equivalent number) of tablespoons of product by the concentration of malathion in the formulation.
 - ** - Computed from tablespoons/teaspoons dosage.
 - # - Exact computation of actual dosage is not possible because of the lack of weight/volume information on the label. Extrapolation from other formulations reveals that the dosage from this label appears to fall within the range shown by formulations with known weight/volume ratios.
 - ULV - Ultra low volume application
- Claims for pest control limited to suppression of population are indicated by an entirely parenthesized pest name.

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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TERRESTRIAL FOOD CROP

(Agricultural Crops)

/23001AA

Alfalfa

135 ppm

No preharvest interval through 1.5 pounds per acre (dust or spray) and 0.875 pound per acre (ultra low volume) for foliar application.
7 day preharvest interval through 2 pounds per acre (spray) and 2.5 pounds per acre (dust) for foliar application.
Do not apply during bloom.

ITBJADC

Alfalfa caterpillar

0.475-2.5 lb/A

INASEWC

Alfalfa weevil

(4%-10% D)

IRACAA

Aphids (including cowpea

(25% WP)

aphid, pea

(4.5-9.7 lb/gal EC)

aphid, spotted

(25-57% EC)**

alfalfa aphid, and yellow clover aphid)

8-9 lb/gal SC/L)

Armyworm (including beet

(9.3-9.79 lb/gal RTU)

armyworm and western

(95% RTU) or

yellow-striped armyworm)

Foliar application. May be applied by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. For armyworms apply when larvae are small. Use higher rates for vetch bruchid. May be formulated with methoxychlor or sulfur.

ITBCCFA

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Alfalfa (continued)

Pest list continued from previous page.

INASBXA	Clover leaf weevil	[MAI] 1.0-2.5 lb/A	
IVABAAA	Grasshoppers	(4-5% D)	
IRAFABA	Leafhoppers (including potato leafhopper)	(2 lb/gal EC) [SLN] [MAI] 0.625-1.43	SLN - Use limited to CT, MD, NM, PA, and WV.
IDAMARA	Lygus bugs	1b/A	Foliar application. May be applied by aircraft in 2 gallons of water per acre.
ILAAABA	Mites (including twospotted spider mite)	(25% WP) (5 lb/gal EC) (23.8% EC)**	May be formulated with methoxy-chlor.
IRAEAAA	Spittlebugs		
IDAQAAA	Stink bugs		
INAGACA	Vetch bruchid		
IVABAAA	Grasshoppers	[ULV] 0.146-0.875 lb/A (9.3-9.79 lb/gal RTU) (95% RTU)**	Ultra low volume application. Foliar application.

/03001AA	<u>Almonds</u>		8 ppm (nuts) 50 ppm (hulls, shells) No preharvest interval through 8 pounds per acre for foliar application.
----------	----------------	--	--

IRACAAA	Aphids	0.5-1 lb/100 gal	Foliar application. For <u>peach twig borer</u> , apply at petal fall or when larvae of May brood appear.
ITAMABA	Peach twig borer	(25% WP)	
IRAAABA	Scales	or	
ILAVAAA	Spider mites (including brown mite)	0.002-0.012 lb/gal (2, 4.4 lb/gal EC) (50% EC)** or 0.625-1.56 lb/100 gal or 0.625-8 lb/A (5, 8 lb/gal EC) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Almonds</u> (continued)		
	1 fl.oz 6.5% EC/gal (6.5% EC)	
IRAWAKA Comstock mealy- bug	[SLN] 1 lb/100 gal [800 gal/A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
ITBQALA Lesser peach- tree borer	1.25 fl.oz 13.7% EC/gal (13.7% EC) or -- (0.5% PrL)	Bark application. Spray trunk and lower branches. Repeat at 21 day intervals. To kill borers in tunnels, insert the tube found on the side of the can of 0.5 percent pressurized liquid formulation into nozzle. Remove sawdust from borer holes in the trunk. Insert tube through borer hole and into tunnel. Spray 1 to 2 seconds. Remove tube and fill hole with pruning point or sealer.
IRAAABA ILAVAAA Scales Spider mites	2.5 fl.oz 6.5% EC/gal (6.5% EC)	Postharvest application. Apply as soon as trees begin to lose their leaves.
708004AF <u>Anise</u>		Tolerance not located. 7 day preharvest interval through 1 pound per acre for foliar application. Apply only to crops to be harvested fresh. Do not apply to crops grown for seed or oil.
IRACAAA ILAVAAA Aphids Spider mites	0.94-1 lb/A (25% WP) (5 lb/gal EC)	Foliar application.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/04001AA <u>Apple</u>		8 ppm 3 day preharvest interval through 15 pounds per acre for foliar application. May cause fruit injury to McIntosh and Cortland varieties if applied within 28 days of harvest.
IRACAAA Aphids (including apple aphid, green peach aphid, rosy apple aphid, and woolly apple aphid)	0.02-0.1 lb/tree or 1.5-3 lb/A (4-5% D) or 0.5-1 lb/100 gal	Delayed dormant and foliar application. For <u>codling moth</u> , <u>oriental fruit moth</u> , and <u>plum curculio</u> , apply at petal fall and repeat at 10 to 14 day intervals as needed. For <u>scales</u> (crawlers), apply when crawlers are present approximately second, fifth, sixth and seventh cover sprays.
IOBMAQA Apple maggot	or	For <u>spider mites</u> , make at least 2 applications at 10 to 12 day intervals in summer months. The wettable powder formulation may be tank mixed with methoxychlor. May be formulated with one or a combination of: dicofol, copper oleate, dichlorone, methoxychlor, ferbam, dinocap, methylated naphthalenes, carbaryl, phthalic glycerol alkyd resin, sulfur, isooctyl phenoxy polyethoxy ethanol, or captan.
ITBKABA Bagworms	2 lb/A	
ITBGAZA Codling moth	or	
ITBGDOA Eyespotted bud moth	1.5 tsp actual*/gal	
IQAMAXA Fourlined plant bug	(25% WP) or	
INBPAZJ Japanese beetle (adults)	0.002-0.034 lb/gal	
IRAFAAA Leafhoppers	(2-5 lb/gal	
IMAAAEA Leafrollers (including fruittree leafroller and redbanded leafroller)	EC) (50-57% EC)** or 0.55-1.56 lb/100 gal or	
IRAWAAA Mealybugs	1.5-15 lb/A	
ILAAABA Mites (including spider mites such as brown mite, European red mite, twospotted spider mite, and Willellette spider mite)	(4.4-8 lb/gal EC) (56.5-57% EC)** or 2.5 fl.oz 6.5% EC/gal (6.5% EC) or 0.67 fl.oz	
ITBUALA Orange tortrix	28% EC/gal	
ITBGAQA Oriental fruit moth	(28% EC) or	
IRAXALA Pear psylla		
INASAVA Plum curculio		
IRAAABG Scales (including cottony-		

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Apple (continued)

Pest list continued from previous page.

	cushion scale, 2 pts 40% EC/ Forbes scale, 100 gal Putnam scale, (40% EC) and San Jose or scale) (crawl- 0.625-1.25 ers) 1b/100 gal	
IQAMATA	Tarnished plant (8 lb/gal bug SC/L)	
ITAVADA	Tent caterpil- [MAI] lars (includ- -- ing eastern tent cater- (4%, 5% D) pillar) or	
ITAPABA	Tentiform leaf- 0.225-1.575 miners tsp actu-	
IMDAAAA	Thrips al*/gal	
ITAPACA	Unspotted ten- (5-7.5% WP) tiform leaf- (3-5% WP/D) miner or	
ITBDADA	Yellownecked 0.004-0.0095 caterpillar 1b/gal (4-9.5% WP) (4.7-7.5% WP/D) or -- or 0.1-0.6 oz/ tree [dust] (3-7.5% WP/D) or 0.01-0.04 lb/ gal (1 lb/gal EC) (50-55% EC)** or 0.5-1.5 lb/ 100 gal (1-2 lb/gal EC) (50-55% EC)** or	

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Apple</u> (continued)		
	0.75-1.25 fl.oz 6% EC/ gal (6% EC) or 2.5-3.5 fl.oz 6-7.5% EC/ gal (6-7.5% EC) or 2 fl.oz 8.07% EC/gal (8.07% EC) or 1 fl.oz 10- 12.5% EC/gal or 7.5% SC/L/gal (10-12.5% EC) (7.5% SC/L) or 1.5 fl.oz 12- 15% EC/gal (12-15% EC)	
Aphids (includ- ing apple aphid, rosy apple aphid, and woolly apple aphid)	0.5-0.75 lb/ 100 gal or 2 lb/A (25% WP) or	Dormant and delayed dormant appli- cation. Make full coverage appli- cation only. Tank mix with petroleum distil- late.
Mites	0.625 lb/100	
Redbanded leaf- roller	gal or	
Scales (includ- ing Forbes scale, Putnam scale, and San Jose scale)	3-15 lb/A (5, 8 lb/gal EC)	
Apple maggot	[SLN] 1 fl.oz 9.4% EC/gal (9.4% EC)	SLN - Use limited to OR and WA. Foliar application. Complete coverage is essential. Apply at first appearance of pest and repeat at 10 to 14 day intervals. Make at least 3 applications. Formulated with dicofol and meth- oxychlor.

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Apple (continued)</u>		
IRAWAKA Comstock mealybug	[SLN] 1 lb/100 gal [1,500 gal/A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
IRAAABA ILAVAAA Scales Spider mites	2.5 fl.oz 6.5% EC/gal (6.5% EC) [MAI] 0.75 fl.oz 6% EC/gal or 1 gal 6% EC/ 100 gal (6% EC)	Postharvest application. Apply as soon as trees lose their leaves. May be formulated with one or a combination of: dicofol, methoxychlor, carbaryl, or captan.
/05001AA <u>Apricot</u>		8 ppm 7 day preharvest interval through 10 pounds per acre for foliar application.
IRACAAA Aphids (including green peach aphid)	2.5-3 lb/A (5% D) or	Delayed dormant and foliar application. May be formulated with dicofol, methoxychlor, dinocap, methylated naphthalenes, carbaryl, or captan.
ITBGAZA ITBGDOA Codling moth Eyespotted bud moth	0.5-1 lb/100 gal (25% WP) or	
INBPAZJ Japanese beetle (adults)	0.002-0.02 lb/gal	
IQAMARA IRAWAAA ITBUALA ITBGAQA Lygus bugs Mealybugs Orange tortrix Oriental fruit moth	(2-5 lb/gal EC) (50-57% EC)** or	
ITAMABA Peach twig borer	0.625-1.56 lb/100 gal	
INASAVA IRAAABG Plum curculio Scales (including brown soft scale, European fruit lecanium and terrapin)	or 2.8-10 lb/A (5-8 lb/gal EC) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Apricot (continued)

Pest list continued from previous page.

	scale) (crawl- 0.67 fl.oz	
	ers)	28% EC/gal
ILAVAAA	Spider mites	(28% EC)
	(such as brown	or
	mite and two-	2 pt 40% EC/
	spotted spider	100 gal
	mite)	(40% EC)
IQAMATA	Tarnished plant	or
	bug	1.25 lb/100
IMDAAAA	Thrips	gal
		(8 lb/gal
		SC/L)
	[MAI]	
	0.225-1.575	
	tsp actu-	
	al*/gal	
	(5-7.5% WP)	
	(3% WP/D)	
	or	

	or	
	0.1-0.6 oz/	
	tree	
	[dust]	
	(3-7.5% WP/D)	
	or	
	0.005-0.0062	
	lb/gal	
	(5% WP)	
	(7.5% WP/D)	
	or	
	5-7 tbls 6%	
	EC/gal	
	(6% EC)	
	or	
	6 tbls 6.5%	
	EC/gal	
	(6.5% EC)	
	or	
	5 tbls 7%,	
	7.5% EC/gal	
	(7%, 7.5% EC)	
	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Apricot (continued)</u>		
	2 tbls 10%, 12.5% EC/gal or 7.5% SC/L/gal (10%, 12.5% EC) (7.5% SC/L) or 3 tbls 12% EC/gal (12% EC) or 0.015 fl.oz 50% EC/gal (50% EC) or 0.007 lb/gal (0.75 lb/gal F1C)	
IRAWAKA	Comstock mealy- bug	[SLN] 1 lb/100 gal [800 gal/A] (8 lb/gal EC) SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
ITBQAH	Peachtree borer	[MAI] 3 fl.oz 6.5% EC/gal (6.5% EC) Bark application. Make 2 or 3 applications to trunk, from ground to scaffold limbs, timed to coincide with moth flight. Formulated with carbaryl.
/16002AA	<u>Asparagus</u>	8 ppm .1 day preharvest interval through 1.25 pounds per acre for foliar application.
IRACAAA	Aphids (including asparagus aphid)	1-1.25 lb/A or 0.03 oz/100 sq. ft (4-10% D) Foliar application. For <u>asparagus beetle</u> , apply when pest first appears. For <u>thrips</u> , apply immediately after cutting.
INAMEDA	Asparagus beetle	May be formulated with mancozeb, maneb, methoxychlor, carbaryl, or sulfur.
IRAFAAA	Leafhoppers	
ILAVAAA	Spider mites	
IMDAAAA	Thrips	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Asparagus (continued)

0.94-1.25
lb/A
(25% WP)
(4.5-8 lb/gal
EC)
(50% EC)**
or
0.09-0.22 oz/
gal
(2-5 lb/gal
EC)
(50-57% EC)**

[MAI]
0.75-1.25
lb/A
(4%, 5% D)
(2 lb/gal EC)
or
1.3 tsp actu-
al*/gal
(4% WP/D)

IRACBDA	Asparagus aphid	[SLN] 2 lb/A (5, 8 lb/gal EC) (55% EC)** or 0.3 oz/gal/ 425 sq. ft (57% EC)**	SLN - Use limited to OR and WA. Apply as a postharvest or as a foliar application to immature stands (fern stage). Apply in late evening or early morning.
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/06001AA	<u>Avocado</u>		8 ppm 7 day preharvest interval through 3 pounds per acre for foliar ap- plication.
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IRACAAA	Aphids	0.75-1 lb/100	Foliar application.
IRAHBEA	Black scale	gal	May be formulated with petroleum
IRAHAGA	Brown soft scale	(25% WP) or	distillate.
IRAKAJA	Latania scale	0.002-0.01	
IRAWAAA	Mealybugs	lb/gal	
ITANAWA	Omnivorous loopers	(2-5 lb/gal EC)	
ITBUALA	Orange tortrix	(50% EC)**	
IRAKBDA	Purple scale	or	
IRAKABA	Red scales (in-		

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Avocado (continued)

Pest list continued from previous page.

	cluding Flori- 0.9375-1.5	
	da red scale) 1b/100 gal	
ILAVAAA	Spider mites or	
IMQAAAA	Thrips (includ- 1.25-9 lb/A	
	ing greenhouse (5, 8 lb/gal	
	thrips) EC)	
IRAHABA	Wax scales or	
IRABAAA	Whiteflies 1 fl.oz 5% EC	
	or SC/L/gal	
	(5% EC)	
	(5% SC/L)	
	or	
	1.25 fl.oz	
	5.25% EC/gal	
	5.25% EC)	
	or	
	2 fl.oz 5.5%	
	EC/gal	
	(5.5% EC)	
	or	
	2.5 fl.oz	
	6.5% EC/gal	
	(6.5% EC)	
	[MAI]	
	1.28 fl.oz	
	5.25% EC/gal	
	or	
	1 gal 5.25%	
	EC/100 gal	
	(5.25% EC)	
IVABAAA	Grasshoppers	
	[SLN]	
	8 fl.oz 95%	
	RTU/A	
	(95% RTU)	
	SLN - Use limited to San Diego	
	and Riverside Counties, CA.	
	Ultra low volume aircraft appli-	
	cation.	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/24001AA <u>Barley</u>		8 ppm (grain)
/24003AA <u>Oats</u>		7 day preharvest interval through
/24005AA <u>Rye</u>		1.25 pounds per acre for foliar application.
/24007AA <u>Wheat</u>		Forage may be fed to livestock 7 days after application.
ITBCCFA Armyworm	0.237-1.25 lb/A	Foliar application. May be applied by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. For armyworms, use the higher rate.
INAMCMA Cereal leaf beetle	(4-5X D)	For cereal leaf beetle, use lower rates.
IRACCGA English grain aphid	(25X WP)	May be formulated with sulfur.
IVABAAA Grasshoppers	(5-8 lb/gal EC)	
IRACDNA Greenbugs	(40-54.6X EC)**	
ILAKABA Winter grain mite	(8-9.3 lb/gal SC/L)	
	(40X SC/L)**	
	(9.3-9.79 lb/gal RTU)	
	(95X RTU)**	
	[MAI]	
	1.25 lb/A	
	(5X D)	
	[SLN]	SLN - Use limited to NM.
	0.625-0.937 lb/A	Foliar application.
	(5 lb/gal EC)	
/15027AA Beans (including green, kidney, lima, navy, snap and wax beans)	8 ppm	1 day preharvest interval through 1.75 pounds per acre for foliar applications and 0.6 pound per acre for undiluted (ultra low volume) applications.
IRACAAA Aphids (including bean aphid)	1-1.75 lb/A or 0.03 oz/100 sq.ft	Foliar application. Make 2 or more applications as needed.
INAMARA Bean leaf beetle	(4-10X D)	May be formulated with one or a combination of: mancozeb, maneb, methoxychlor, carbaryl, sulfur, or captan.
INBGAAA Blister beetles	(25X WP)	
ITBCBOA Corn earworm	or	
INAMACA Cucumber beetles	0.7-0.9 tsp actual*/gal	
ITBCABA Cutworms	(25X WP)	
INBUAAA Darkling beetles	(4X WP/D) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Beans (continued)

Pest list continued from previous page.

IQAMAXA	Fourlined plant bug	0.63-1.75 lb/A	
INBPAAZ	Japanese beetle	(4.3-8 lb/gal EC)	
IQAXAAA	Lace bugs	(50-57% EC)**	
IRAFAAA	Leafhoppers (including potato leafhopper)	0.09-0.3 oz/gal	
IQAMARA	Lygus bugs	(2-5 lb/gal EC)	
IRAWAAA	Mealybugs	(28-57% EC)**	
INAPAAA	Mexican bean beetle	[MAIL]	
INASDPA	Pea leaf weevil	0.9-1.75 lb/A	
IRAXAAA	Psyllids	or	
INBJAAA	Sap beetles	0.05 oz/100 sq. ft	
IQABAAA	Serpentine leafminer complex	or	
ILAVAAA	Spider mites (including twospotted spider mite)	0.03 oz/10 ft row (2-5% D)	
IQAQAAA	Stink bugs	0.9-1.3 tsp actual*/gal (7.5% WP)	
IQAMATA	Tarnished plant bug	(4%, 5% WP/D) or 0.5-1.5 lb/A (1, 2 lb/gal EC) or 3-5 tsp 6.5%, 7% EC/gal (6.5%, 7% EC) or 6-12 tsp 8.07-15% EC/gal (8.07-15% EC)	
ITBCCCA	Green clover-worm	[ULV] 0.6 lb/A	Ultra low volume foliar application.
INBPAAZ	Japanese beetle	(9.3-9.79 lb/gal RTU)	
IRAFAAA	Leafhoppers	(95% RTU)**	
IQAMARA	Lygus bugs		
INAPAAA	Mexican bean beetle		

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Beans</u> (continued)		
IQAMARA Lygus bugs	0.94-1.25 lb/A (5 lb/gal EC)	Foliar application. Labelling claims control on dry beans in CA and northwest United States. Apply the lower rate by aircraft.
/28002AA <u>Beets</u>		1 ppm (sugar beets, roots) 8 ppm (beets, sugar beets, including tops) 7 day preharvest interval through 2.5 pounds per acre for foliar application.
IRACAA Aphids (including bean aphid)	1-2 lb/A or 0.03 oz/100 sq. ft	Foliar application. May be formulated with one or a combination of: methoxychlor, carbaryl, rotenone, sulfur, or captan.
INAMADA Flea beetles	sq. ft	
ITBMBVA Garden webworm	(4%, 5% D)	
IRAFAA Leafhoppers	(25% WP)	
IMAAAGA Leafminers	or	
ILAVAA Spider mites	0.75-2.5 lb/A	
IMAAAA Thrips	(4.5-8 lb/gal EC) (57% EC)** or 0.05-0.2 oz/gal (2-5 lb/gal EC) (50-57% EC)** [MAI] 0.05 oz/100 sq. ft (4%, 5.6% D) or 6-15 tsp 6-12.5% EC/gal (6-12.5% EC)	
/28002DA <u>Beets</u> (seed crop)		1 ppm (sugar beets, roots) 8 ppm (beets, sugar beets including tops) No preharvest interval through 1.25 pounds per acre for foliar application to seed crop.
IQAMARA Lygus bugs	1.25 lb/A (5, 8 lb/gal EC)	Foliar application to seed crops.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/01002AA /01003AA /01004AA /01005AA /01006AA	<u>Blackberry</u> <u>Boysenberry</u> <u>Dewberry</u> <u>Loganberry</u> <u>Raspberry</u>	8 ppm 1 day preharvest interval through 4.5 pounds per acre (raspberry) and 4 pounds per acre (others) for foliar application.
IRACAAA IRAHBBA IRAHALA	Aphids Black scale European fruit lecanium	1.6-4 lb/A (4-5% D) . or 0.5-1.25 lb/
IRAHBAA	Hemispherical scale	100 gal or
INBPAZJ	Japanese beetle (adults)	0.5-2 lb/A (25% WP)
IRAFAAA IMAAAEA ILAAABA	Leafhoppers Leafrollers Mites (includ- ing spider mites such as twospotted spider mite)	or 0.01-0.02 lb/ gal (2-5 lb/gal EC) (50-57% EC)** or
INASAVA IRAXAAA INAIABA	Plum curculio Psyllids Raspberry fruit- worms	0.9375-1.875 lb/100 gal or 0.9375-4.5
IRAKALA INBPAUA INBJAAA	Rose scale Rose chafer Sap beetles (raspberry only)	lb/A (5-8 lb/gal EC) (57% EC)** or
IRAEAAA IMDAAA IRABAAA	Spittlebugs Thrips Whiteflies	2.5-6 fl.oz 5% EC/gal (5% EC) or 1.5 fl.oz 6.5% EC/gal (6.5% EC) or 1-4 lb/A (8 lb/gal SC/L)
		[MAI] 1.6-2 lb/A (4-5% D) or 0.57-0.9 tsp actual*/gal (6-9.5% WP) or

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Blackberry cluster (continued)

1.75 lb/A
(2 lb/gal EC)
or
2.5 fl.oz
6.5%
EC/gal
(6.5% EC)
or
1 fl.oz 10-
12.5% EC/gal
(10-12.5% EC)
or
0.007 lb/gal
(0.75 lb/gal
SC/L)

/01004AA
/01006AA
IRACAAA
IRAAABA

(Dewberry)
(Raspberry)
Aphids
Scales

2.565 tsp
actual*/gal
(9.5% WP)

Delayed dormant application.

0.57 tsp
actual*/gal
(9.5% WP)

Delayed dormant, foliar and post-harvest application. Apply just prior to bloom, when new canes are 1.5 feet high and just after harvest.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/01009AA	<u>Blueberry</u>	8 ppm 1 day preharvest interval through 2.5 pounds per acre for foliar application. 8 hour preharvest interval through 0.625 pound per acre for foliar application in Northwestern United States only. No preharvest interval through 0.76 pound per acre of liquid ready-to-use formulation for ultra low volume foliar application.
IOBMAPA	Blueberry maggot	Foliar application. Mix wettable powder formulations with bait.
	1-1.25 lb/A (4-5% D)	
	or	
	1.5 tsp actual*/gal	
	or	
	0.5 lb/A (25% WP)	
	or	
	--	
	or	
	0.72-0.84 tsp actual*/gal	
	(4% WP/D)	
	or	
	0.625 lb/A (8 lb/gal EC)	
	0.625 lb/100 gal/A	Use limited to northwestern United States.
	(5 lb/gal EC)	Foliar application. Mix with bait.
	[ULV]	Ultra low volume foliar application.
	0.73-0.76	
	lb/A	
	(9.3-9.79 lb/gal RTU)	

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Blueberry (continued)

IRACAAA	Aphids	1-2.5 lb/A	Foliar application. For <u>cranberry fruitworm</u> , make first application at egg hatch and repeat at 4 to 5 day intervals until a total of 4 applications have been made. For <u>Japanese beetle</u> , apply when first berries turn blue and repeat at 10 day intervals as needed. For <u>plum curculio</u> and <u>sharp-nosed leafhopper</u> , apply when largest berries of earliest ripening varieties are 0.25 inch in diameter and repeat 7 to 10 days later. May be formulated with one or a combination of: methoxychlor, carbaryl, sulfur, or captan.
IOBMAPA	Blueberry maggot	(4-7.5% D) or	
INALBAA	Blueberry tip borer	0.5-2 lb/A (25% WP)	
ITBGARA	Cherry fruitworm	or 0.01-0.02 lb/gal	
ITBMAGA	Cranberry fruitworm	(5 lb/gal EC)	
INBPAZJ	Japanese beetle (adults)	(50% EC)** or	
IRAFAAA	Leafhoppers (including sharpnosed leafhopper)	0.47-0.625 lb/100 gal (5 lb/gal EC) or	
IMAAAEA	Leafrollers	0.9375-2.5 lb/A	
ILAAABA	Mites (including spider mites)	(5-8 lb/gal EC)	
INASAVA	Plum curculio	or	
IMDAAA	Thrips	2.5 qt 40% EC/A	[MAI] 1-2 lb/A (4% D) or -- [dust] or 0.004 lb/gal (4% WP/D) or 0.5 lb/A (2 lb/gal EC) or 1 fl.oz 12.5% EC/gal (12.5% EC) or
ITAXADA	Whitemarked tussock moth	(40% EC) or 2 lb/A (8 lb/gal SC/L) or 2.5 qt 40% SC/L/A (40% SC/L)	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Blueberry</u> (continued)		
	0.007 lb/gal (0.75 lb/gal F1C)	
<u>Boysenberry</u>		See Blackberry cluster.
/14003AA <u>Carrot</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA Aphids	1.2-2 lb/A	Foliar application. For <u>aphids</u> , apply the lower dosage. For <u>leaf-</u> <u>hoppers</u> , apply the higher dosage. May be formulated with one or a combination of: mancozeb, maneb, copper oleate, methoxychlor, car- baryl, rotenone, sulfur, or cap- tan.
INAMADA Flea beetles	or	
IRAFAAA Leafhoppers	0.03 oz/100	
ILAVAAA Spider mites	sq. ft	
IMDAAA Thrips	(4-10% D)	
	or	
	0.5-2 lb/A	
	(25% WP)	
	(5, 8 lb/gal EC)	
	or	
	0.09-0.22 oz/ gal	
	(2-5 lb/gal EC)	
	(50-57% EC)**	
	[MAI]	
	0.5-2 lb/A	
	(3-5% D)	
	(2 lb/gal EC)	
	or	
	4.5-12 tsp	
	6-12.5% EC/ gal	
	(6-12.5% EC)	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/13003AA <u>Celery</u>		8 ppm 7 day preharvest interval through 1.5 pounds per acre for foliar application.
IRACAAA	Aphids	1.2-1.5 lb/A
ITBMCQA	Celery leaf-tier	or
INAMACA	Cucumber beetles	0.03 oz/100 sq. ft
ITBCABA	Cutworms	(4%, 5% D)
INBPAZA	Japanese beetle	or
IRAFAAA	Leafhoppers	0.5-1.5 lb/A
ILAVAAA	Spider mites	(25% WP)
	(including	or
	twospotted	0.94-1.5 lb/A
	spider mite)	or
IMDAAA	Thrips	0.06-0.3 oz/
IRABAAA	Whiteflies	gal
		(2-8 lb/gal
		EC)
		(50-57% EC)**
		[MAI]
		1-1.5 lb/A
		or
		0.06 oz/100
		sq. ft
		(5%, 5.6% D)
/05002AA <u>Cherry</u>		8 ppm 3 day preharvest interval through 8 pounds per acre for foliar application. 1 day preharvest interval through 1.2 pounds per acre for ultra low volume foliar application by aircraft. Drying may occur on certain varieties of sweet cherries particularly in the Northwest United States.
IRACAAA	Aphids	0.5-0.75 lb/
IRAAABA	Scales	100 gal
		(25% WP)
		Dormant and delayed dormant application. Tank mix with petroleum distillate.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>	
<u>Cherry (continued)</u>			
IRACAAA	Aphids (including black cherry aphid and green peach aphid)	0.02-0.05 lb/tree (4-5% D) or 1.75-3 lb/A (5% D)	Foliar application. For <u>cherry fruit fly</u> , repeat at 10 day intervals. For <u>Forbes scale</u> and <u>San Jose scale</u> , apply 21 days before harvest.
IOBMALA	Cherry fruit fly		
ITBGAZA	Codling moth	1.5 tsp actual*/gal	
ITBGDOA	Eyespotted bud moth		
ITBUAGA	Fruittree leaf-roller	0.5-1 lb/100 gal	
INBPAZJ	Japanese beetle (adults)	0.5-3 lb/A (25% WP)	
IRAFAAA	Leafhoppers		
ITBQALA	Lesser peach-tree borer	0.002-0.02 lb/gal EC	
ILAAABA	Mites (including spider mites such as brown mite, European red mite, and two-spotted spider mite)	(2-5 lb/gal EC) (50-57%EC)** or 0.625-1.56 lb/100 gal	
ITBUALA	Orange tortrix	2.5-8 lb/A	
ITBGAQA	Oriental fruit moth	(5-8 lb/gal EC)	
INASAVA	Plum curculio	(50% EC)**	
ITBUAPA	Redbanded leaf-roller	or 2 pt 40% EC/100 gal	
IRAAABA	Scales (including Forbes scale and San Jose scale)	(40% EC) or 0.75-1 lb/100 gal	
IMOAAAA	Thrips	gal (8 lb/gal SC/L)	
		[MAI]	
		--	
		(4-5% D) or 0.004-0.0062 lb/gal (4-5% WP) (4-7.5% WP/D) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Cherry (continued)

	0.225-1.575 tsp actual*/ gal (5-7.5% WP) (3-5% WP/D) or -- [dust] (3-7.5% WP/D) or 0.01 lb/gal (1 lb/gal EC) or 0.5-1.5 lb/ 100 gal (1-2 lb/gal EC) or 0.75-1.25 fl.oz 6% EC/ gal or 1 gal 6% EC/ 100 gal (6% EC) or 2.5-3.5 fl.oz 6-7.5% EC/ gal (6-7.5% EC) or 1.5 fl.oz 12- 15% EC/gal (12-15% EC) or 1 fl.oz 12.5% EC or 7.5% SC/L/gal (12.5% EC) (7.5% SC/L) or 0.66 fl.oz 50% EC/gal (50% EC) or 0.007 lb/gal (0.75 lb/gal F1C)	
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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Cherry (continued)</u>		
IOBMALA Cherry fruit fly	0.87-1.2 lb/A (9.3-9.79 lb/ gal RTU)	Ultra low volume foliar application. Apply by aircraft only. Use higher rate when foliage is heavy or infestation is severe. Make first application as soon as flies appear.
IRAWAKA Comstock mealybug	[SLN] 1 lb/100 gal [800 gal/A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
IOBMAQA (sour cherry) Apple maggot	[SLN][MAI] 2 tbls 9.4% EC/gal (9.4% EC)	SLN - Use limited to OR and WA. Foliar application. Complete coverage is essential. Make first application on first appearance of pest and repeat at 10 to 14 day intervals. Make at least 3 applications. Formulated with dicofol and methoxychlor.
IRAKBVA IRAKBYA Forbes scale San Jose scale	1.5 lb/A (25% WP) or 0.625-1 lb/ 100 gal (5-8 lb/gal EC) [MAI] 0.5-0.625 lb/ 100 gal (2 lb/gal EC) or 0.75 fl.oz 6% EC/gal or 1 gal 6% EC/ 100 gal (6% EC)	Postharvest application. May be formulated with one or a combination of: dicofol, methoxychlor, carbaryl, or captan.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Cherry (continued)

ITBQALA	Lesser peach-tree borer 1 lb/100 gal (25% WP) or 1.25 fl.oz 13.7% EC/gal (13.7% EC) or -- (0.5% PrL) [MAI] 1.2 tsp actual*/gal (5% WP) or 1 lb/100 gal (2 lb/gal EC)	Bark application. Spray trunk and lower branches, beginning with emergence in June. Repeat at 21 day intervals. To kill borers in trunks, insert the tube found on the side of the can of 0.5 percent pressurized liquid formulation into nozzle. Remove sawdust from borer holes in the trunk. Insert tube through borer hole and into tunnel. Spray 1 to 2 seconds. Remove tube and fill hole with pruning paint or sealer. May be formulated with methoxychlor.
ITBQAHA	Peachtree borer [MAI] 3 fl.oz 6.5% EC/gal (6.5% EC)	Bark application. Make 2 or 3 applications to trunk, from ground to scaffold limbs, timed to coincide with moth flight. Formulated with carbaryl.
ISBEAEA	Pearslug 1.5-2 lb/A (5% D)	Foliar and postharvest application. Apply 14 to 21 days preharvest and again postharvest.
/03004AA	<u>Chestnut</u>	1 ppm No preharvest interval through 5 pounds per acre for foliar application. Do not apply after shuck-split. Do not graze livestock in treated groves.
ILAAABA	Mites 0.5 lb/100 gal (25% WP) or 0.625-0.9375 lb/100 gal (5 lb/gal EC) or 2-5 lb/A (8 lb/gal EC)	Foliar application. Apply when mites appear in numbers and repeat 7 to 10 days later.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/02000DA <u>Citrus Fruits</u> (nursery stock)		
ILAJAXA Citrus bud mite [SLN]		SLN - Use limited to CA.
IRAAABA Scales 2 lb/100 gal		Dip or spray application. Dip or
IRABAAA Whiteflies (25% WP)		spray entire plant as a quaran- tine treatment. Tank mix with petroleum distil- late.
/23003AA <u>Clover</u>		135 ppm No preharvest interval through 1.5 pounds per acre (dust or spray) and 0.875 pound per acre (ultra low volume) for foliar ap- plication. 7 day preharvest interval through 2 pounds per acre (spray) and 2.5 pounds per acre (dust) for foliar application. Do not apply during bloom.
INASBWC Alfalfa weevil 0.57-2.5 lb/A		Foliar application. May be ap- plied by aircraft. The ready-to-
	(larvae) (4-10% D)	use formulation may be applied by
IRACAAA Aphids (includ- (25% WP)		ultra low volume equipment. May
	ing pea aphid) (4.5-9.7 lb/	be applied to <u>clover</u> grown for
ITBCCFA Armyworm gal EC)		seed.
IQAMAJA Black grass bug (25-57% EC)**		May be formulated with methoxy-
INASBXA Clover leaf (9.3-9.79 lb/		chlor or sulfur.
	weevil gal RTU)	
IVABAAA Grasshoppers (95% RTU)**		
IRAFAAA Leafhoppers		
	(including [MAI]	
	potato leaf- 1-2 lb/A	
	hopper) (4%, 5% D)	
IQAMARA Lygus bugs		
ILAVAAA Spider mites		
	(including	
	strawberry	
	spider mite)	
IRAEAAA Spittlebugs		
	(including	
	meadow spit-	
	tlebug)	
INAGACA Vetch bruchid		

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Clover</u> (continued)		
INASBXA	Clover leaf weevil	SLN - Use limited to OR and TX. Foliar application. Apply by aircraft using ultra low volume equipment. Use higher rate for longer residual effect.
IVABAAA	Grasshoppers	
IREAKA	Meadow spittlebug	
ILAVBDA	Strawberry spider mite	
IVABAAA	Grasshoppers	Ultra low volume application. Foliar application.
	[SLN] 0.45-0.95 lb/A (95% RTU)**	
	[ULV] 0.146-0.875 lb/A (9.3-9.79 lb/gal RTU) (95% RTU)**	
/13004AA	<u>Cole Crops</u> (including broccoli, brussels sprouts, cabbage, cauliflower, collards, kale, mustard greens, and turnips)	5 ppm (broccoli) 8 ppm (brussels sprouts, cabbage, cauliflower, collards, kale, mustard greens, and turnips) 3 day preharvest interval through 3 pounds per acre (spray) and 2.5 pounds per acre (dust) to <u>broccoli</u> and <u>turnips</u> for foliar application. 7 day preharvest interval through 3 pounds per acre (spray) and 2.5 pounds per acre (dust) to <u>brussels sprouts</u> , <u>cabbage</u> , <u>cauliflower</u> , <u>collards</u> , <u>kale</u> , and <u>mustard greens</u> .
IRACAAA	Aphids (including cabbage aphid and turnip aphid)	Foliar application. For <u>aphids</u> , apply lower dosages. For control of caterpillars on summer and fall plantings in South, apply when true leaves appear. On other plantings, and for control of other insects, apply when pests first appear. May be formulated with mancozeb, maneb, methoxychlor, carbaryl, rotenone, sulfur, or captan.
ITBCCFA	Armyworm	
ITBCCSA	Cabbage looper	
ITBCBOA	Corn earworm	
INAMACA	Cucumber beetles	
ITBWABA	Diamondback moth	
INAMADA	Flea beetles	
IQAMAXA	Fourlined plant bug	
IQAQAKA	Harlequin bug	
ITBJAHA	Imported cabbageworm	

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Cole Crops (continued)

Pest list continued from previous page.

INBPAZA	Japanese beetle	0.72-0.84 tsp
IQAXAAA	Lace bugs	actual*/gal
IRAFAAA	Leafhoppers	or
IMAAAGA	Leafminers	0.06 oz/gal
ILAVAAA	Spider mites	(4% WP/D)
	(including	or
	twospotted	0.03-0.36 oz/
	spider mite)	gal
IQAMATA	Tarnished plant	[1 gal/100-
	bug	435 sq.ft]
IMOAAAA	Thrips	(2-5 lb/gal
ITAAAMA	Webworms (in-	EC)
	cluding garden	(28-57% EC)**
	webworm)	
IRABAAA	Whiteflies	[MAI]
		0.5-2.5 lb/A
		or
		0.06 oz/10 ft
		row
		or
		0.05-0.1 oz/
		100 sq.ft
		(2-5% D)
		or
		1.3 tsp
		actual*/gal
		(4% WP/D)
		or
		1.25 lb/A
		(2 lb/gal EC)
		or
		9-15 tsp 6-7%
		EC/gal
		(6-7% EC)
		or
		6-9 tsp 12%,
		12.5% EC/gal
		(12%, 12.5%
		EC)

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/28005AA <u>Corn</u>		2 ppm (corn, fresh including sweet corn plus corn with husks removed) 8 ppm (forage, grain) 5 day preharvest interval or pre-grazing interval through 1.5 pounds per acre (dust) and 1.25 pound per acre (spray) for foliar application or through 0.3 pound per acre for ultra low volume or low volume foliar application.
IRACAAA Aphids (includ-	1-1.5 lb/A	Foliar application. For <u>aphids</u> , apply spray formulations by locating pests in leaf sheath and use as much water as possible, directing spray into whorl. For <u>corn earworm</u> , begin treatment when 10 percent of ears show silk. Make 4 to 5 applications at 3 to 5 day intervals. Injury may occur in the whorl stage. For <u>grasshoppers</u> , apply at the nymphal stage. May be formulated with one or a combination of: mancozeb, maneb, carbaryl, or sulfur.
	ing corn leaf (4%, 5% D)	
	aphid) or	
ITBCCFA Armyworm	0.89-1.25	
INAMCMA Cereal leaf	lb/A	
	beetle (25% WP)	
INAMBHJ Corn rootworms	(4.5-8 lb/gal	
	(adults) EC)	
IVABAAA Grasshoppers	(40-57% EC)**	
INBPAZA Japanese beetle	or	
INBJAAA Sap beetles	0.75 tsp	[MAI] 1-1.5 lb/A or 0.03-0.06 oz/ 10 ft row (3-5.6% D) or 1 lb/A (1, 2 lb/gal EC) or 9-15 tsp 6- 12% EC/gal (6-12% EC)
ILAVAAA Spider mites	actual*/gal	
IMDAAAA Thrips	(25% WP)	
	or	
	0.008-0.028	
	oz/gal	
	(4.4 lb/gal	
	EC)	
	(50% EC)**	
	[MAI]	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Corn (continued)</u>		
INAMBHJ Corn rootworms (adults)	0.3 lb/A (9.33 lb/gal EC) (9.3, 9.33 lb/gal SC/L) (9.7, 9.79 lb/gal RTU)	Ultra low volume or low volume foliar application.
/28007AA <u>Cotton</u>		2 ppm (seed) No preharvest interval through 7.25 pounds per acre for foliar application.
IRACAAA Aphids (including green peach aphid and cotton aphid)	0.269-4 lb/A (4-10% D) (25% WP) (5-9.7 lb/gal EC)	Foliar application. May be applied by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. May be applied alone as ultra low volume concentrate or diluted in once-refined cottonseed or vegetable oil to make a minimum of 1 quart finished spray per acre.
INASAAA Boll weevil	(50-57% EC)**	For <u>lygus bugs</u> , use higher rates for very heavy or migrating populations. For <u>boll weevil</u> , apply higher rates for late season population. Repeat every 3 to 7 days as necessary.
ITBCAFA Brown cotton leafworm	(8-9 lb/gal SC/L)	May be tank mixed with pyrethrins.
ITBCBOB Bollworm	(9.3-9.79 lb/gal RTU)	May be formulated with methoxychlor, parathion, or sulfur.
ITBCADA Cotton leafworm	(95% RTU)**	
ITAYAAA Cotton leaf perforator	[MAI]	
ITBCCOA Fall armyworm	0.25-7.25 lb/A	
IQAMBDA Fleahoppers (including cotton flea-hopper)	(4%, 5% D) (2-6 lb/gal EC)	
ITMBVAA Garden webworm		
IVABAAA Grasshoppers		
IRAFAAA Leafhoppers (including southern garden leafhopper)	[SLN] 0.287-1.02 lb/A (45.1-95% RTU)**	SLN - Use limited to AR, LA, MS, NM, and TX. Foliar application. Apply by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. Use higher rates for late season or migrating populations of <u>lygus bugs</u> or <u>boll weevil</u> .
IQAMARA Lygus bugs (including tarnished plant bug)	1.25-2.5 lb/A (5 lb/gal EC)	May be tank mixed with pyrethrins.
ILAAABA Mites (including desert spider mite, Pacific spider mite, and two-spotted spider mite)		
IMOAAAA Thrips		

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Cotton (continued)

Pest list continued from previous page.

IRABAAA	Whiteflies		
/23040DA	<u>Cowpeas</u> (hay)	135 ppm	No preharvest interval through 1.25 pounds per acre for foliar application.
IRACAAA	Aphids	0.937-1.25	Foliar application.
INAMACA	Cucumber beetle	1b/A	
IVABAAA	Grasshoppers	(5-8 lb/gal	
INBPAZJ	Japanese beetle	EC)	
	(adults)		
INAPAFB	Mexican bean beetle		
ILAVAAA	Spider mites		
/10010AA	<u>Cucumber</u>	8 ppm	
/10001AA	<u>Melons</u> (including cantaloupe, casaba, crenshaw, honeydew melons, honey balls, muskmelons, persian melons, and watermelons)	1 day preharvest interval through 2.25 pounds per acre (dust) and 1.88 pounds per acre (spray) to cucumber, melons, and squash for foliar applications.	
/10011AA	<u>Pumpkin</u>	3 day preharvest interval through 2 pounds per acre (dust) and 1.88 pounds per acre (spray) to pumpkin for foliar application.	
/10012AA	<u>Squash</u>	Do not apply unless plants are dry.	
IRACAAA	Aphids	0.8-2.25 lb/A	Foliar application. Apply the higher dosage for aphids, cucumber beetles, spider mites and squash vine borers. For squash vine borer, apply at 7 day intervals to stems, bases, and vines of plants.
ITBCCFA	Armyworm	(4-10% D)	
ITBCCSA	Cabbage looper	or	
INAMACA	Cucumber beetles	0.75-1.88 lb/A	
ITBCABA	Cutworms	(25% WP)	
ITBCABA	Darkling beetles	(4.5-8 lb/gal EC)	
IMDAAAA	Earwigs	(50-57% EC)**	May be formulated with mancozeb, maneb, methoxychlor, carbaryl, rotenone, sulfur, or captan.
INAMADA	Flea beetles	or	
IQAMAAA	Garden flea-hopper	0.03 oz/100 sq. ft	
IVABAAA	Grasshoppers	(5% D)	
IQAXAAA	Lace bugs	or	
IQAMARA	Lygus bugs	0.75 tsp	
IRAWAAA	Mealybugs	actual*/gal	
ITBMAUA	Melonworm	(25% WP)	
ITBMAWA	Pickleworm	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Cucumber cluster (continued)

Pest list continued from previous page.

ILAVAAA	Spider mites (including twospotted spider mite)	0.72-0.84 tsp actual*/gal or 0.06 oz/gal
INAPAEA	Squash beetle	(4% WP/D)
IQAGAFa	Squash bug	or
ITBQADA	Squash vine borer	0.08-0.3 oz/ gal
IQAQAAA	Stink bugs	[1 gal/100-
IMOAAAA	Thrips	435 sq.ft]
IRABAAA	Whiteflies	(2-5 lb/gal EC) (28-57% EC)**
		[MAI]
		0.5-1.5 lb/A or
		0.03 oz/10 ft row or
		0.05-0.08 oz/ 100 sq.ft (2-5.6% D) or
		0.9-1.5 tsp actual*/gal (7.5% WP) (4%, 5% WP/D) or
		1-1.75 lb/A (1, 2 lb/gal EC) or
		9-12 tsp 6- 8.07% EC/gal (6-8.07% EC) or
		6-10 tsp 9.4- 12.5% EC (9.4-12.5% EC)

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/01011AA	<u>Currant</u>		8 ppm
/01013AA	<u>Gooseberry</u>		1 day (currant) or 3 day (gooseberry) preharvest interval through 2 pounds per acre for foliar application.
IRACBNA	Currant aphid	0.5-1 lb/100	Foliar application.
ISBEATA	Imported currantworm	gal or	May be formulated with methoxychlor.
INBPAZJ	Japanese beetle (adults)	0.5-2 lb/A (25% WP) or	
ILAAABA	Mites	or	
INBPAVA	Rose chafer	0.625-0.9375 lb/100 gal [200 gal/A] or 1-2 lb/A (5-8 lb/gal EC) [MAI] 2 lb/A (2 lb/gal EC) or 1 fl.oz 12.5% EC/gal (12.5% EC)	
/13014AA	<u>Dandelion</u>		8 ppm 7 day preharvest interval through 1.75 pounds per acre (dust) and 2 pounds per acre (spray) for foliar application.
IRACAAA	Aphids	1.2-1.75 lb/A	Foliar application. For <u>aphids</u> ,
IRAFAAA	Leafhoppers	(5%, 10% D) or 0.5-1.25 lb/A (25% WP) or 0.94-2 lb/A or 0.04-0.19 oz/ gal (2-8 lb/gal EC)	apply the lower dosage.

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<u>Site and Pest</u>		<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/06004AA	<u>Date</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar application. 21 day preharvest interval through 4.25 pounds per acre for SLN application in CA of 5 percent dust formulation.
INBJAAA	Nitidulid beetles	0.8-2 lb/A (4-5% D) or 0.625-2 lb/A (5-8 lb/gal EC) [MAI] 1.9 lb/A (5% D) [SLN] 4.25 lb/A (5% D) [SLN] [MAI] 4.25 lb/A (5% D)	Use limited to areas other than CA. Foliar application. May be formulated with ferbam and sulfur. SLN - Use limited to CA. Foliar application. SLN - Use limited to CA. Foliar application. Formulated with ferbam and sulfur.
	<u>Dewberry</u>		See Blackberry cluster.
/11001AA	<u>Eggplant</u>		8 ppm 3 day preharvest interval through 3.5 pounds per acre for foliar application.
IRACAAA	Aphids	0.8-3.5 lb/A	Foliar application. For <u>lace</u>
INBGAAA	Blister beetles	(4%, 5% D)	<u>bugs</u> , apply the higher dosage.
INAMACA	Cucumber beetles	or	May be formulated with mancozeb,
ITBCCOA	Fall armyworm	0.5-1.5 lb/A	maneb, methoxychlor, carbaryl,
IQALAHA	False chinch bug	(25% WP)	rotenone, sulfur, or captan.
		or	
INAMADA	Flea beetles	0.63-3.5 lb/A	
IQASAAA	Lace bugs	(4-8 lb/gal EC)	
IRAFCAA	Leafhoppers	(50-57% EC)**	
IOBMATA	Pepper maggot	or	
ILAVAAA	Spider mites (including twospotted spider mites)	0.03 oz/100 sq. ft (5% D) or	

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Eggplant (continued)

Pest list continued from previous page.

IQAQAAA	Stink bugs	0.75 tsp
ITBCBOA	Tomato fruit-worm	actual*/gal (25% WP)
ITBRAJA	Tomato hornworm	or
ILAJAHA	Tomato russet mite	0.72-0.84 tsp actual*/gal or 0.06 oz/gal (4% WP/D) or 0.03-0.31 oz/gal [1 gal/100-435 sq. ft] (2-8 lb/gal EC) (50-55% EC)**
		[MAI]
		0.9-3.5 lb/A or 0.05-0.06 oz/100 sq. ft (2-5.6% D) or 0.7-1.3 tsp actual*/gal (4% WP/D) or 1-1.75 lb/A (1, 2 lb/gal EC) or 4.5-9 tsp 6-12.5% EC/gal (6-12.5% EC)

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/13015AA <u>Endive</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
ITBCAVA IRACAAA ITBCCFA ITBCCSA IRAFAAA IMAAAGA ILAVAAA IMDAAAA IRABAAA	Alfalfa looper 1.2-2 lb/A Aphids (4-10% D) Armyworm or Cabbage looper 0.5-2 lb/A Leafhoppers (25% WP) Leafminers (5, 8 lb/gal Spider mites EC) Thrips or Whiteflies 0.09-0.2 oz/ gal (2, 4.4 lb/ gal EC) (50% EC)** [MAI] 1.2-2 lb/A (4%, 5% D)	Foliar application. May be formulated with mancozeb, maneb, carbaryl, rotenone, or cap- tan.
/06005AA <u>Fig</u>		8 ppm 3 day preharvest interval through 2.5 pounds per acre for foliar ap- plication.
INBJACA IOAPABA	Dried fruit beetle 1.6-2 lb/A Drosophila (4-5% D) or 0.002-0.005 lb/gal (2-4.4 lb/gal EC) or 1.2-5 lb/100 gal or 2.5 lb/A (5-8 lb/gal EC) or 2.5 lb/A (8 lb/gal SC/L) [MAI] 2 lb/A (4-5% D)	Foliar application. Mix with bait. May be formulated with sulfur.

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/03005AA	<u>Filbert</u>		1 ppm No preharvest interval through 3 pounds per acre for foliar application.
IRAWAHA	Apple mealybug	2-3 lb/A	Foliar application.
ITBGDOA	Eyespotted bud moth	(4-5% D) or	May be formulated with sulfur.
IRACCPA	Filbert aphid	0.5 lb/100 gal	
IRAAABG	Scales (crawlers)	(25% WP)	
IQAXAAA	Thrips	or 0.625-0.9375 lb/100 gal or 2.5-3 lb/A (5-8 lb/gal EC) or 0.33 fl.oz 50% EC/gal (50% EC) or 0.625 lb/100 gal (8 lb/gal SC/L)	
		[MAI] 2 lb/A (4-5% D)	
/27004AA	<u>Flax</u>		0.1 ppm (seed) 45 day preharvest interval through 0.583 pounds per acre for foliar application.
IVABAAA	Grasshoppers	0.583 lb/A (9.33 lb/gal RTU)	Foliar application. Apply by aircraft with ultra low volume equipment. Apply once per season. Do not graze or feed forage to livestock.
		[SLN] 0.95 lb/A (95% RTU)**	SLN - Use limited to ND. Foliar application. Apply by aircraft with ultra low volume equipment.

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/22000AA	<u>Forage-Fodder Grasses</u> (including bermudagrass, pastures, and rangeland)	135 ppm No preharvest interval through 1.875 pounds per acre for foliar application.
IRACAAA ITBCCFA IVABAAA IRAFAAA	Aphids Armyworm Grasshoppers Leafhoppers 0.5-1.875 lb/A (25% WP) (5-9.7 lb/gal EC) (50-54.6% EC)** (9 lb/gal SC/L) (9.3-9.79 lb/gal RTU)	Foliar application. May be applied by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. The emulsifiable concentrate formulations may be applied in 1 gallon of diesel fuel oil per acre by aircraft or by turbine blower. Repeat as necessary. May be formulated with sulfur.
[MAI]	1.2-1.6 lb/A (4% D)	
IVABAAA	Grasshoppers [SLN] 0.937-1.25 lb/A (5 lb/gal EC) or 0.475-0.712 lb/A (95% RTU)**	SLN - Use limited to CA, OR, and TX. Foliar application. Apply by aircraft. The ready-to-use formulations are applied by ultra low volume equipment.
/14007AF	<u>Garlic</u>	8 ppm 3 day preharvest interval through 1.25 pounds per acre (dust) and 2 pounds per acre (spray) for foliar application.
IRACAAA IRAFAAA ILAVAAA IMDAAA	Aphids Leafhoppers Spider mites Thrips 1.2-1.25 lb/A (4%, 5% D) or 0.94-2 lb/A (25% WP) (5, 8 lb/gal EC) or 0.04-0.18 oz/gal (2-5 lb/gal EC) (50% EC)**	Foliar application.
<u>Gooseberry</u>		See Currant cluster.

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/02002AA	<u>Grapefruit</u>		8 ppm
/02003AA	<u>Kumquat</u>		7 day preharvest interval through
/02004AA	<u>Lemon</u>		25 pounds per acre for foliar ap-
/02005AA	<u>Lime</u>		plication.
/02006AA	<u>Tangelo</u>		Do not apply at bloom.
/02007AA	<u>Tangerine</u>		
IRACAA	Aphids (includ- --		Foliar application.
	ing green (4% D)		May be formulated with one or a
	citrus aphid) or		combination of: dicofol, copper
INASCWA	Fullers rose 2.25 tsp		salt of fatty and rosin acids,
	beetle actual*/gal		carbaryl, petroleum distillate,
IRAWAA	Mealybugs (in- or		or sulfur.
	cluding citrus 0.25-2 lb/100		
	mealybug) gal		
IOBMADA	Mediterranean (25% WP)		
	fruit fly or		
IRAAABA	Scales (includ- 0.006-0.13		
	ing black lb/gal		
	scale, brown (2-5 lb/gal		
	soft scale, EC)		
	California red (5-53% EC)**		
	scale, citri- or		
	cola scale, 0.45-2 lb/100		
	Florida purple gal		
	scale, purple or		
	scale, snow 0.625-25 lb/A		
	scale, and (5-8 lb/gal		
	yellow scale) EC)		
ILAVAA	Spider mites (50-56.5%		
	(including EC)**		
	citrus red or		
	mite) 0.625-1.25		
IMAAAA	Thrips lb/100 gal		
IRABAA	Whiteflies (8 lb/gal		
	SC/L)		
	or		
	1.25 fl.oz 5%		
	SC/L/gal		
	(5% SC/L)		
	[MAI]		
	25 lb/A		
	(5% D)		
	or		
	0.375 lb/100		
	gal		
	(18.75% WP)		
	or		

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Grapefruit cluster (continued)</u>		
	0.01 lb/gal or 1 lb/100 gal (1 lb/gal EC) or 1.28 fl.oz 5.25% EC/gal or 1 gal 5.25% EC/100 gal (5.25% EC) or 3 fl.oz 6.5% EC/gal (6.5% EC) or 1.66 fl.oz 12% EC/gal (12% EC) or 1.5 fl.oz 12.8% EC/gal (12.8% EC)	
IRACAAA	Aphids	0.625-0.875
IRAHAGA	Brown soft scale	1b/A (25% WP)
IRAHAGA	Citricola scale	
ITAAFA	Orangeworms	
IMAAAA	Thrips	
IRAWAKA	Comstock mealybug	[SLN] 1 lb/100 gal [2,500 gal/A] (8 lb/gal EC)
		SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
IOBMAAA	Fruit flies (including Mediterranean fruit fly)	[SLN] 0.5-0.75 lb/A (8 lb/gal EC) or 0.437-0.656 lb/A (9.33 lb/gal RTU)
		SLN - Use limited to CA. Foliar application. Apply by aircraft or ground equipment. Apply liquid-ready to use formulation by ultra low volume equipment. Mix with bait.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Grapefruit cluster (continued)</u>		
IOBMAAA Fruit flies (including Mexican fruit fly)	[SLN][ULV] 0.175 lb/A (9.33 lb/gal RTU)	SLN - Use limited to TX. Ultra low volume foliar applica- tion. Apply by aircraft or ground equipment. Mix with bait. Make no more than 3 applications before harvest.
IOBMADA Mediterranean fruit fly	0.5-0.75 lb/A (25% WP)	Foliar application. Mix with bait.
/O1014AA <u>Grapes</u>		8 ppm 3 day preharvest interval through 2.75 pounds per acre for foliar application. Injury may occur on Almeria, Car- dinal, Italia and Ribier varie- ties when applied after clusters appear.
IRACAAA IOAPABA IRAHALA	Aphids Drosophila European fruit lecanium	0.8-2.75 lb/A (4-5% D) or 0.25-0.75 lb/ 100 gal
INEPAZJ	Japanese beetle (adults)	or 0.25-1.5 lb/A (25% WP)
IRAFAAA	Leafhoppers (including grape leaf hopper and variegated leafhopper)	or 0.006-0.03 lb/gal (2-5 lb/gal EC)
IRAWAAA ILAAABA	Mealybugs Mites (includ- ing spider mites)	(50-50.9% EC)** or
ITBUAPA	Redbanded leaf- roller	0.625-1.875 lb/100 gal
IRAKALA IRAHANA IMDAAA	Rose scale Terrapin scale Thrips	or 0.9375-2.75 lb/A (5-8 lb/gal EC) (50% EC)** or 1 lb/200-275 gal/A (8 lb/gal SC/L) or

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Grapes (continued)

	5 pt 40% SC/L/A (40% SC/L)	
	[MAI] 0.8-2.75 lb/A (4-5% D) or 0.45-1.575 tsp actual*/ gal (5-7.5% WP) (3-5% WP/D) or 0.004-0.0095 lb/gal (9.5% WP) (4-7.5% WP/D) or -- [dust] (3-7.5% WP/D) or 0.01 lb/gal or 1 lb/100 gal (2 lb/gal EC) or 0.75-1.25 fl.oz 6% EC/ gal (6% EC) or 2.34 fl.oz 7.5% EC/gal (7.5% EC) or 1 fl.oz 10- 12.5% EC/gal (10-12.5% EC) or 0.007 lb/gal (0.75 lb/gal F1C)	

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
<u>Grapes</u> (continued)		
IRAWAKA	Comstock mealy- bug [SLN] 1 lb/100 gal [275 gal/A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
INBJACA	Dried fruit beetle	Protection treatment for grapes during drying in the field. Raisins should be screened to remove dead pests and any other debris prior to storage.
IOAPABA	Drosophila	
ITBMAMA	Raisin moth	
	300 mg/6 sq. ft tray (0.9% Impr) or 600 mg/6 sq. ft tray (1.8% Impr) or 100-200 mg/ sq. ft of paper used for drying trays (5-8 lb/gal EC)	
IOAPABA	Drosophila	SLN - Use limited to CA. Protection treatment of grapes during drying in the field. Apply over crop in field or raisin trays. Formulated with sulfur.
IRAVAJA	Grape phyl- loxera	Dip treatment. Remove excess soil from the roots and dip in solution. Submerge the entire root system for 5 minutes. Keep the solution agitated at all times.
IRAFADA	Variegated leafhopper	Use limited to CA. Postharvest application. Apply this rate in the Coachella Valley.

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<u>Site and Pest</u>		<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/22000AA	<u>Grass</u>		135 ppm
/22000DA	<u>Grass Hay</u>		No preharvest interval through 1.5 pounds per acre (dust or spray) and 0.875 pound per acre (ultra low volume) for foliar application. 7 day preharvest interval through 2 pounds per acre (spray) and 2.5 pounds per acre (dust) for foliar application.
IRACAAA	Aphids	0.475-2 lb/A	Foliar application. May be applied by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. The emulsifiable concentrate formulations may be applied in 1 gallon of diesel fuel oil per acre by aircraft or turbine blower. Repeat as necessary. For <u>armyworms</u> , apply thorough coverage when larvae are small. May be formulated with methoxychlor or sulfur.
ITBCCFA	Armyworm	(4-10% D)	
IQAMAJA	Black grass bug	(25% WP)	
INAMCMA	Cereal leaf beetle	(5-9.7 lb/gal EC)	
IVABAAA	Grasshoppers	(50-54.6% EC)**	
IRAFAAA	Leafhoppers	(9 lb/gal SC/L)	
		(9.3-9.79 lb/gal RTU)	
		(95% RTU)**	
		[MAI]	
		0.5-1.6 lb/A	
		(4% D)	
		(2 lb/gal EC)	
ITBCCFA	Armyworm	[SLN]	SLN - Use limited to MT, OR, and TX.
IVABAAA	Grasshoppers	0.45-0.952 lb/A	Foliar application. May be applied by aircraft. The ready-to-use formulation may be applied by ultra low volume equipment.
		(95% RTU)**	May be formulated with acephate.
		or	
		[SLN] [MAI]	
		0.094 lb/A	
		(75% WP)	
IVABAAA	Grasshoppers	[ULV]	Ultra low volume application.
		0.146-0.875 lb/A	Foliar application.
		(9.3-9.79 lb/gal RTU)	
		(95% RTU)**	
	<u>Grass Hay</u>		See Grass cluster.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/06006AA <u>Guava</u> /06007AA <u>Mango</u> /06014AA <u>Passion Fruit</u>		8 ppm (guava and mango) 2 day preharvest interval through 0.75 pound per acre for foliar ap- plication. No preharvest interval (passion fruit) through 0.75 pound per acre.
IDAPABA <u>Drosophila</u>	0.5 lb/30-40 gal/A or 0.75 lb/40- 150 gal/A (25% WP)	Foliar application. Add partial- ly hydrolyzed yeast protein or enzymatic yeast hydrolyzate.
/08022AA <u>Horseradish</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA <u>Aphids</u> ITBWAFB <u>Diamondback</u> <u>moth</u> INAMADA <u>Flea beetles</u> IRAFAAA <u>Leafhoppers</u>	1.2-2 lb/A (4-10% D) or 0.5-2 lb/A (25% WP) or 0.94-2 lb/A (5, 8 lb/gal EC) or 0.03 oz/100 sq. ft (5% D) or 0.04-0.18 oz/ gal (2-5 lb/gal EC) (50% EC)** [MAI] 1.2-2 lb/A (4%, 5% D)	Foliar application. May be formulated with mancozeb, maneb, carbaryl, rotenone, or cap- tan.

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/13012AA	<u>Kohlrabi</u>		8 ppm 7 day preharvest interval through 1.88 pounds per acre for foliar application.
IRACAA	Aphids	0.5-1.88 lb/A	Foliar application.
ITBCCSA	Cabbage looper	(5%, 10% D)	May be formulated with mancozeb,
ITBWFA	Diamondback	(25% WP)	maneb, carbaryl, rotenone, sul-
	moth	(5, 8 lb/gal	fur, or captan.
ITBJAA	Imported cab-	EC)	
	bageworm		
ITAAAMA	Webworms	[MAI]	
		0.5-1.2 lb/A	
		or	
		0.05 oz/100	
		sq. ft	
		(3-5% D)	
	<u>Kumquat</u>		See Grapefruit cluster.
/14010AA	<u>Leek</u>		8 ppm 3 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAA	Aphids	0.63-2 lb/A	Foliar application. For <u>aphids</u> ,
IRAFAA	Leafhoppers	(4%, 5% D)	apply the lower dosage. For
IDACACA	Onion maggot	(25% WP)	<u>thrips</u> , apply the higher dosage.
ILAVAA	Spider mites	(5, 8 lb/gal	
IMQAAA	Thrips	EC)	
		or	
		0.04-0.27 oz/	
		gal	
		(2-5 lb/gal	
		EC)	
		(50% EC)**	
	<u>Lemon</u>		See Grapefruit cluster.

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/23006AA	<u>Lespedeza</u>		8 ppm (seed) 135 ppm (hay and straw) No preharvest interval through 1.25 pounds per acre for foliar application.
IVABAAA	Grasshoppers	0.937-1.25 lb/A (5-8 lb/gal EC)	Foliar application.
/13020AA	<u>Lettuce</u>		8 ppm 7 day preharvest interval through 4 pounds per acre (dust) and 2 pounds per acre (spray) to <u>head</u> <u>lettuce</u> for foliar application. 14 day preharvest interval through 4 pounds per acre (dust) and 2 pounds per acre (spray) to <u>leaf lettuce</u> for foliar applica- tion.
ITBCAVA	Alfalfa looper	1.2-4 lb/A	Foliar application. For <u>six-spot-</u>
IRACAAA	Apnids (includ- ing green peach aphid)	(4-10% D) or 0.94-2 lb/A	<u>ted leafhopper</u> , apply when plants are about 0.5 inch high. May be formulated with mancozeb, maneb, methoxychlor, carbaryl, rotenone, sulfur, or captan.
ITBCCFA	Armyworm	(25% WP)	
ITBCCSA	Cabbage looper	(4.5-8 lb/gal EC)	
ITBOECA	Corn earworm	(50-57% EC)**	
INAMADA	Cucumber bee- tles	or	
ITBWAFB	Diamondback moth	0.03 oz/100 sq. ft	
INAMADA	Flea beetles	(5% D)	
ITBJA-A	Imported cab- bageworm	or 0.03-0.36 oz/ gal	
IRAXAAA	Lace bugs	[1 gal/100- 435 sq. ft]	
IRAFAAA	Leafhoppers (including six-spotted leafhopper)	(2-5 lb/gal EC)	
IDABARA	Serpentine leafminer com- plex	(50-57% EC)** [MAI]	
ILAVAAA	Spider mites (including twospotted spider mite)	1.2-4 lb/A or 0.06 oz/100 sq. ft	
IGAMATA	Tarnished plant bug	(4-5.6% D) or	
ITAAAMA	Webworms		

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Lettuce (continued)

Pest list continued from previous page.

IRABAAA	Whiteflies	1-2 lb/A (2 lb/gal EC) or 4.5-9 tsp 6-12.5% EC/ gal (6-12.5% EC)	
	<u>Lime</u>		See Grapefruit cluster.
	<u>Loganberry</u>		See Blackberry cluster.
/23037DA	<u>Lupine</u>		135 ppm No preharvest interval through 1.25 pounds per acre for foliar application.
IVABAAA	Grasshoppers	0.937-1.25 (5-8 lb/gal EC)	Foliar application.
/03007AA	<u>Macadamia Nut</u>		1 ppm No preharvest interval through 15 pounds per acre.
IQAQACA	Green stink bug	1 lb/100 gal (25% WP) or 0.9375-1.875 lb/100 gal or 3-15 lb/A (5-8 lb/gal EC)	Foliar application. Apply when pest starts to feed on nuts.
	<u>Mango</u>		See Guava cluster.
	<u>Melons</u> (including cantaloupe, casaba, crenshaw, honeydew melons, honey balls, musk- melons, persian melons, and watermelons)		See Cucumber cluster.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/28012AA	<u>Mint</u> (including peppermint and spearmint)	8 ppm (peppermint, spearmint) 7 day preharvest interval through 1 pound per acre for foliar application.
ITBCAVA	Alfalfa looper	0.94-1 lb/A
IRACAAA	Aphids	(5% D)
ITBCCFA	Armyworm	(5, 8 lb/gal
ITBCCSA	Cabbage looper	EC)
ITBCABA	Cutworms	(40% EC)**
INAMADJ	Flea beetles (adults)	
IRAFAAA	Leafhoppers	
INASABA	Root weevils	
ILAVAAA	Spider mites	
/05003AA	<u>Nectarine</u>	8 ppm 7 day preharvest interval through 10 pounds per acre for foliar application. May cause fruit spotting.
IRACAAA	Aphids (including black cherry aphid, black peach aphid, green peach aphid, and rusty plum aphid)	0.625-1 lb/100 gal (25% WP) or 0.002-0.012 lb/gal (2-4.4 lb/gal EC)
ITBGAZA	Codling moth	(50% EC)**
ITBGDOA	Eyespotted bud moth	0.625-1.875 lb/100 gal or
IRAHAWA	Cottony peach scale	or
IRAKEVA	Forbes scale	0.625-10 lb/A
INBPAZJ	Japanese beetle (adults)	(5-8 lb/gal EC)
ITBQALA	Lesser peach-tree borer	[MAI]
ILAAABA	Mites (including spider mites such as European red mite and two-spotted spider mite)	3 fl.oz 6.5% EC/gal (6.5% EC) or 1.5 fl.oz 12% EC/gal (12% EC)
ITBUALA	Orange tortrix	or
ITBGAQA	Oriental fruit moth	0.007 lb/gal (0.75 lb/gal
INASAVA	Plum curculio	F1C)

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Nectarine (continued)

Pest list continued from previous page.

IRAHANA	Terrapin scale		
IMORAAA	Thrips		
IRAWAKA	Comstock mealy- bug	[SLN] 1 lb/100 gal [1,000 gal/ A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
IRAKBPA	Olive scale	0.5 lb/100 gal (25% WP)	Foliar application. Apply only at petal fall. Tank mix with petroleum distillate.
ITBQAHA	Peachtree borer	6 tbls 6.5% EC/gal (6.5% EC)	Bark application. Make 2 or 3 applications to trunk, from ground to scaffold limbs, timed to coincide with moth flight. Formulated with carbaryl.
	<u>Oats</u>		See Barley cluster.
/15015AA	<u>Okra</u>		8 ppm 1 day preharvest interval through 1.25 pounds per acre (dust) and 1.5 pounds per acre (spray) for foliar application.
IRACAAA	Aphids	0.75-1.25	Foliar application.
ITBCBOA	Corn earworm	1b/A	May be formulated with methoxy-
INBPAZA	Japanese beetle	(4-10% D)	chlor, carbaryl, rotenone, sul-
IQAQAAA	Stink bugs	or 0.94-1.5 lb/A (25% WP) (5, 8 lb/gal EC) or 0.03 oz/100 sq. ft (5% D) or	fur, or captan.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Okra</u> (continued)		
	0.18-0.25 oz/ gal (5 lb/gal EC) (50% EC)**	
	[MAI] 0.8-1.2 lb/A (2-4% D)	
/14011AA <u>Onion</u>		8 ppm
/16004AA <u>Onion</u> (green)		3 day preharvest interval through 2 pounds per acre to <u>green onions</u> for foliar application.
10ACACA 1M0AAAA	Onion maggots Thrips (includ- ing onion thrips)	0.75-2 lb/A (4-10% D) (25% WP) (4.5-8 lb/gal EC) (50-57% EC)** or 0.03 oz/100 sq. ft (5% D) or 0.08-0.28 oz/ gal [1 gal/100- 435 sq. ft] (2-5 lb/gal EC) (50-57% EC)**
		Foliar application. For <u>onion maggots</u> , apply the higher dosage. May be formulated with mancozeb, maneb, carbaryl, rotenone, or sul- fur.
	[MAI] 1.25-2 lb/A or 0.05 oz/100 sq. ft (4%, 5% D)	
	<u>Onion</u> (green)	See Onion cluster.
/14011BA	<u>Onion</u> (seed crop)	8 ppm (including green onions) No preharvest interval through 2 pounds per acre for foliar appli- cation to seed crop.
1M0CAVA	Onion thrips	1.75-2 lb/A (5% D) Foliar application to seed crop.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/06010AA <u>Papaya</u>		1 ppm No preharvest interval through 1.25 pounds per acre.
IRACAAA Aphids IRAWAAA Mealybugs	1.25 lb/100 gal/A (25% WP) or 0.9375-1.25 lb/100 gal/A (5-8 lb/gal EC)	Foliar application.
/13022AA <u>Parsley</u>		8 ppm 21 day preharvest interval through 2 pounds per acre for foliar application.
IRACAAA Aphids IRAFAAA Leafhoppers	0.5-2 lb/A (5%, 10% D) or (25% WP) or (5, 8 lb/gal EC) or 0.04-0.19 oz/ gal (2, 4.4 lb/ gal EC) [MAI] 1.2-1.6 lb/A (4% D)	Foliar application. May be formulated with carbaryl, rotenone, sulfur, or captan.
/14012AA <u>Parsnip</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA Aphids INAMADA Flea beetles IRAFAAA Leafhoppers ILAVAAA Spider mites IMOAAAA Thrips	1.2-2 lb/A (4-10% D) or 0.5-2 lb/A (25% WP) or 0.9-2 lb/A (5, 8 lb/gal EC) or	Foliar application.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Parsnip</u> (continued)		
	0.04-0.2 oz/ gal (2, 4.4 lb/ gal EC)	
<u>Passion Fruit</u>		See Guava cluster.
/05004AA <u>Peach</u>		8 ppm 7 day preharvest interval through 9 pounds per acre for foliar ap- plication.
IRACAAA Aphids	0.5-0.75 lb/	Dormant and delayed dormant ap- plication. Tank mix with petroleum distil- late.
ITAMABA Peach twig borer	100 gal or	
IRAAABA Scales	1.5 lb/A (25% WP)	
IRACAAA Aphids (includ- ing black cherry aphid, black peach aphid, green peach aphid, and rusty plum aphid)	0.02-0.05 lb/ tree (4-5% D) or 2.5-3 lb/A (5% D) or 1.5 tsp actu- al*/gal	Delayed dormant and foliar appli- cation. For <u>scales</u> and <u>peach twig borer</u> , make full coverage ap- plication at completion of hatch- ing, approximately the last of June. For <u>oriental fruit moth</u> and <u>plum curculio</u> , apply at petal fall and repeat at 10 to 14 day intervals.
ITBGAZA Codling moth	or	
IRAHAWA Cottony peach scale	0.5-2 lb/100 gal	
IRAHALA European fruit lecanium	or	May be formulated with one or a combination of: dicofol, copper oleate, dichlone, methoxychlor, dinocap, carbaryl, phtalic gly- cerol alkyd resin, sulfur, iso- octyl phenoxy polyethoxy ethanol, or captan.
ITBGDOA Eyespotted bud moth	2-3 lb/A (25% WP)	
INBPAZJ Japanese beetle (adults)	or 0.002-0.03 lb/gal	
IRAFAAA Leafhoppers	(2-5 lb/gal EC)	
IQAMARA Lygus bugs	(28-57% EC)**	
IRAWAAA Mealybugs	or	
ILAAABA Mites (includ- ing spider mites such as brown mite, European red mite, and two- spotted spider mite)	0.625-1.56 lb/100 gal or 2.5-9 lb/A (5-8 lb/gal EC)	
ITBUALA Orange tortrix	(40-50% EC)**	
ITBGAGA Oriental fruit moth	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Peach (continued)

ITAMABA	Peach twig borer	1.25 lb/100 gal
INASAVA	Plum curculio	(8 lb/gal
ITBUAPA	Redbanded leaf-roller	SC/L)
IRAHANA	Terrapin scale	[MAI]
IMOAAAA	Thrips	--
		(4-5% D)
		or
		0.004-0.006
		lb/gal
		(4-7.5% WP)
		(3-7.5% WP/D)
		or
		--
		[dust]
		(3-7.5% WP/D)
		or
		0.01 lb/gal
		(1 lb/gal EC)
		or
		0.5-1 lb/100
		gal
		(1-2 lb/gal
		EC)
		or
		2.5-3.5 fl.oz
		6-7.5% EC/
		gal
		(6-7.5% EC)
		or
		1 gal 6% EC/
		100 gal
		(6% EC)
		or
		2 fl.oz 8.07%
		EC/gal
		(8.07% EC)
		or
		1 fl.oz 10%
		EC or 7.5%
		SC/L/gal
		(10% EC)
		(7.5% SC/L)
		or

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>	
<u>Peach</u> (continued)			
	0.835-1.5 fl.oz 12% EC/gal (12% EC) or 1.5 fl.oz 15% EC/gal (15% EC) or 1 fl.oz 55% EC/gal or 2-3 pt 55% EC/100 gal (55% EC) or 0.007 lb/gal (0.75 lb/gal F1C)		
IRAWAKA	Comstock mealy- bug	[SLN] 1 lb/100 gal [900 gal/A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
ITBQALA	Lesser peach- tree borer	1 lb/100 gal (25% WP) or 1.25 fl.oz 13.7% EC/gal (13.7% EC) or -- (0.5% PrL) [MAI] 1.2 tsp actual*/gal (5% WP)	Bark application. Spray trunk and lower branches. Repeat at 21 day intervals. To kill borers in trunks, insert the tube found on the side of the can of 0.5 percent pressurized liquid formulation into nozzle. Remove sawdust from borer holes in the trunk. Insert tube through borer hole and into tunnel. Spray 1 to 2 seconds. Remove tube and fill hole with pruning paint or sealer. May be formulated with methoxychlor.

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Peach</u> (continued)		
ITBQAH A Peachtree borer	[MAI] 3 fl.oz 6.5% EC/gal (6.5% EC) or 1.5 fl.oz 10% EC/gal (10% EC)	Bark application. Make 2 to 3 applications to trunk from ground to scaffold limbs timed with moth flight. Formulated with dicofol, methoxy-chlor, and dinocap.
/28015AA <u>Peanuts</u>		135 ppm No preharvest interval through 1 pound per acre for foliar application.
IRAF A A A Leafhoppers (including potato leaf- hopper)	0.625-1 lb/A (4-10% D) (25% WP) (5-8 lb/gal EC)	Foliar application. May be applied by aircraft. Apply when insects or damage first appear. For <u>thrips</u> , use higher dosage.
IMD A A A A Thrips	(50% EC)** [MAI] 0.8-1 lb/A (4-5% D)	May be formulated with sulfur.
/04003AA <u>Pear</u>		8 ppm 1 day preharvest interval through 15 pounds per acre for foliar application. Injury may occur under certain conditions in the Northeast on Bosc variety of pears.
IRAC A A A Aphids	0.5-0.75 lb/	Dormant and delayed dormant appli-
IMAA A E A Leafrollers	100 gal	cation.
IRAXALA Pear psylla	(25% WP)	Tank mix with petroleum distil-
IRAAABA Scales	or 3-15 lb/A (8 lb/gal EC)	late.

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MALATHION

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Pear (continued)

IRACAAA	Aphids (including apple aphid, apple grain aphid, rosy apple aphid, and woolly apple aphid)	0.02-0.05 lb/tree (4-5% D) or 1.5-3 lb/A (5% D) or 0.75-1.5 tsp actual*/gal	Delayed dormant and foliar application. For <u>codling moth</u> , <u>oriental fruit moth</u> , and <u>plum curculio</u> , apply at petal fall and repeat at 10 to 14 day intervals. For <u>scales</u> , apply when crawlers are present, approximately first or second cover and last half of July. For <u>spider mites</u> , make at least 2 applications at 10 to 12 day intervals in summer months. May be formulated with one or a combination of: dicofol, copper oleate, methoxychlor, dinocap, methylated naphthalenes, carbar-yl, phthalic glycerol alkyd resin, sulfur, isooctyl phenoxy poly-ethoxy ethanol, or captan.
ITBGAZA	Codling moth	actual*/gal	
ITBGDOA	Eyespotted bud moth	0.56-1 lb/ or 100 gal	
IRAKBVA	Forbes scale (including crawlers)	0.5-2 lb/A (25% WP) or	
IQAMAXA	Fourlined plant bug	or	
INBPAZJ	Japanese beetle (adults)	0.002-0.03 lb/gal	
IRAFAAA	Leafhoppers	(2-5 lb/gal EC)	
IMAAAEA	Leafrollers (including fruittree leafroller and redbanded leafroller)	(6.5-57% EC)** or 0.55-1.875 lb/100 gal	
IRAWAAA	Mealybugs	(4.4-8 lb/gal EC)	
ILAAABA	Mites (including spider mites such as brown mite, European red mite, Pacific spider mite, twospotted spider mite, and Willamette spider mite)	(57% EC)** or 1.875-15 lb/A (5-8 lb/gal EC) or 0.625-1.25 lb/100 gal (8 lb/gal SC/L)	
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth	[MAI]	
IRAXALA	Pear psylla	(4-5% D) or	
INASAVA	Plum curculio	or	
IRAKBYA	San Jose scale (including crawlers)	0.004-0.00625 lb/gal (4-7.5% WP) or	
IQAMATA	Tarnished plant bug	(3-7.5% WP/D) or	
IMDAAAA	Thrips		

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Pear (continued)

	--	
	or	
	0.1-0.6 oz/	
	tree	
	[dust]	
	(3-7.5% WP/D)	
	or	
	0.01 lb/gal	
	(1 lb/gal EC)	
	or	
	0.5-1.5 lb/	
	100 gal	
	(1-2 lb/gal	
	EC)	
	or	
	0.75-1.25	
	fl.oz 6% EC/	
	gal	
	or	
	1 gal 6% EC/	
	100 gal	
	(6% EC)	
	or	
	2.5-3 fl.oz	
	6.5% EC/gal	
	(6.5% EC)	
	or	
	2.5 fl.oz 7-	
	7.5% EC/gal	
	(7-7.5% EC)	
	or	
	2 fl.oz 8.07%	
	EC/gal	
	(8.07% EC)	
	or	
	1 fl.oz 10-	
	12.5% EC or	
	7.5% SC/L/	
	gal	
	(10-12.5% EC)	
	(7.5% SC/L)	
	or	
	1.5 fl.oz 12%	
	EC/gal	
	(12% EC)	
	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Pear</u> (continued)		
IOBMAQA	0.66 fl.oz 50% EC/gal or 1.5-2 pt 50% EC/100 gal (50% EC) or 1 fl.oz 55% EC/gal or 2-3 pt 55% EC/100 gal (55% EC)	SLN - Use limited to OR and WA. Foliar application. Complete coverage is essential. Make first application on first appearance of pest and repeat at 10 to 14 day intervals. Make at least 3 applications. Formulated with dicofol and methoxychlor.
	Apple maggot	
IRAWAKA	[SLN][MAI] 1 fl.oz 9.4% EC/gal (9.4% EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
	Comstock mealybug	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/28016AA <u>Peas</u>		8 ppm (peas, pea vines, and pea-vine hay) 3 day preharvest interval (if vines are not to be used for feed) through 2.5 pounds per acre for foliar application. 7 day preharvest interval (if vines are to be used for feed) through 2.5 pounds per acre for foliar application. 14 day preharvest interval through 0.6 pound per acre for ultra low volume or low volume application.
ITBCAVA Alfalfa looper	1-2.4 lb/A	Foliar application. For <u>leafhoppers</u> and <u>Mexican bean beetle</u> ,
IRACAAA Aphids (includ-	(4-10% D)	make 2 or more applications as
	or	needed. For <u>pea aphids</u> , apply
ITBCCFA Armyworm	1-1.75 lb/A	during early bloom before eggs
INAMARA Bean leaf bee-	(25% WP)	are oviposited.
	or	May be formulated with mancozeb,
	0.8-2.5 lb/A	maneb, methoxychlor, carbaryl,
INBGAAA Blister beetles	(4.5-8 lb/gal	sulfur, or captan.
ITBCCSA Cabbage looper	EC)	
ITBCARA Celery looper	(40-57% EC)**	
IQAMAXA Fourlined plant	or	
	bug	
IVABAAA Grasshoppers	0.03 oz/100	
INBPZJ Japanese beetle	sq. ft	
	(5% D)	
	or	
IRAFAAA Leafhoppers	0.7-0.9 tsp	
	(including	actual*/gal
	potato leaf-	(25% WP)
	hopper)	or
INAPAF Mexican bean	0.09-0.28 oz/	
	beetle	gal
INAGADA Pea weevil	(2-5 lb/gal	
ILAVAAA Spider mites	EC)	
	(including	(28-57% EC)**
	twospotted	
	spider mite)	[MAI]
IQAMATA Tarnished plant	0.9-2.5 lb/A	
	bug	or
IMDAAA Thrips	0.05 oz/100	
IRABAAA Whiteflies	sq. ft	
	(2-5% D)	
	or	
	0.03 oz/10 ft	
	row	
	(2-5% D)	
	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Peas</u> (continued)		
	0.7-1.5 tsp actual*/gal (4%, 5% WP/D) or 1.25 lb/A (2 lb/gal EC) or 6-15 tsp 7- 12.5% EC/gal (7-12.5% EC)	
INAGADA	Pea weevil	[ULV] Use limited to Northwest United States. 0.6 lb/A Ultra low volume or low volume (9.3, 9.33 foliar application. 1b/gal SC/L) (9.7, 9.79 1b/gal RTU)
/03008AA	<u>Pecan</u>	8 ppm No preharvest interval through 12.5 pounds per acre for foliar application.
IRACAA	Aphids (includ- ing walnut aphid)	0.4-10 lb/A (4-5% D) or
ILAAABA	Mites (includ- ing spider mites such as European red mite)	0.75-1 lb/100 gal or 2.25 lb/A (25% WP)
ITBGATA	Pecan bud moth	or
ITBMADA	Pecan nut case- bearer	0.002-0.03 lb/gal
IRAVAA	Pecan phyl- loxera	(2-5 lb/gal EC)
IOBMAMA	Walnut husk fly	(50-57% EC)** or 0.625-2.58 lb/100 gal or 2.5-12.5 lb/A (5-8 lb/gal EC) (50-57% EC)** or

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Pecan</u> (continued)		
	1-1.25 lb/100 gal (8 lb/gal SC/L)	
	[MAI] 4 lb/A (4% D) or 10 lb/A (5% D) or 1.5-2 pt 50% EC/100 gal (50% EC)	
IRAWAKA	Comstock mealybug [SLN] 1 lb/100 gal [1,250 gal/A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
/28017AA	<u>Peppers</u>	8 ppm 3 day preharvest interval through 1.5 pounds per acre for foliar application.
IRACAAA	Aphids	Foliar application. For <u>aphids</u> , apply the low dosage. For <u>pepper maggot</u> , apply the high dosage. May be formulated with mancozeb, maneb, methoxychlor, carbaryl, rotenone, sulfur, or captan.
INBGAAA	Blister beetles	
ITBCBOA	Corn earworm	
ITBMCCA	European corn borer	
ITABAIA	Fall armyworm	
IQALAHA	False chinch bug	
INAMADA	Flea beetles	
IQAXAAA	Lace bugs	
IRAFAAA	Leafhoppers	
IOBMATA	Pepper maggot	
ILAVAAA	Spider mites	
IQAQAAA	Stink bugs	
ITBRAJA	Tomato hornworm	

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Peppers (continued)

0.72-0.84 tsp
actual*/gal
(4% WP/D)
or
0.03-0.31 oz/
gal
[1 gal/100-
435 sq. ft]
(2-5 lb/gal
EC)
(50-57% EC)**

[MAI]
0.9-1.6 lb/A
or
0.05-0.06 oz/
100 sq. ft
(2-5.6% D)
or
0.7-1.3 tsp
actual*/gal
(4% WP/D)
or
1 lb/A
(1 lb/gal EC)
or
4-9 tsp 6-
12.5% EC/gal
(6-12.5% EC)

/06013AA Pineapple

8 ppm
7 day preharvest interval through
5 pounds per acre for foliar ap-
plication.

IRAWAAA Mealybugs

4-5 lb/A
(5% D)
or
5 lb/A
(25% WP)
or
0.625 lb/100
gal
or
5 lb/100-500
gal/A
(5 lb/gal EC)

Foliar application.

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Pineapple</u> (continued)		
	[SLN] 3-5 lb/200- 500 gal/A (25% WP)	SLN - Use limited to HI. Foliar application. Repeat as needed.
/05005AA <u>Plum</u> /05006AA <u>Prune</u>		8 ppm 3 day preharvest interval through 10 pounds per acre for foliar ap- plication.
IRACAAA Aphids IRAAABA Scales	0.5-0.75 lb/ 100 gal (25% WP) or 0.625 lb/100 gal (5-8 lb/gal EC) or 5-10 lb/A (8 lb/gal EC)	Dormant and delayed dormant appli- cation. Tank mix with petroleum distil- late.
IRACAAA Aphids (includ- ing green peach aphid and mealy plum aphid)	1-3 lb/A (4-5% D) or 1.5 tsp actu- al*/gal	Delayed dormant and foliar appli- cation. For <u>oriental fruit moth</u> and <u>plum curculio</u> , apply at petal fall and repeat at 7 to 10 day intervals as needed.
ITBGAZA Codling moth ITBGDOA Eyespotted bud moth	or 0.25-1 lb/100 gal	May be formulated with one or a combination of: dicofol, methoxy- chlor, methylated naphthalenes, carbaryl, or captan.
INBPAZJ Japanese beetle (adults)	(25% WP) or	
IRAFAAA Leafhoppers IMAAAEA Leafrollers (including redbanded leafroller)	0.002-0.03 lb/gal (2-5 lb/gal EC) (50-57% EC)**	
ITBQALA Lesser peach- tree borer	or 0.39-1.875 lb/100 gal	
IRAWAAA Mealybugs ITBUALA Orange tortrix ITBGAQA Oriental fruit moth	or 1.875-10 lb/A (5-8 lb/gal EC)	
INASAVA Plum curculio IRAAABG Scales (includ- ing European fruit lecani- um) (crawlers)	(50-57% EC)** or	

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Plum cluster (continued)

Pest list continued from previous page.

ILAVAAA	Spider mites (including brown mite, European red mite, four- spotted spider mite, and two- spotted spider mite)	1 fl.oz 6.5% EC/gal (6.5% EC) or 2 pt 40% EC/ 100 gal (40% EC) or 0.625-0.75 lb/100 gal (8 lb/gal SC/L)
IMOAAAA	Thrips	
		[MAI] 0.004-0.00625 lb/gal (4-5% WP) (3-7.5% WP/D) or 0.225-1.575 tsp actual*/ gal (6-7.5% WP) or -- [dust] (3-7.5% WP/D) or 0.6 oz/tree [dust] (7.5% WP/D) or 0.01 lb/gal (1 lb/gal EC) or 0.5-1.5 lb/ 100 gal (1-2 lb/gal EC) or 0.75-3.5 fl.oz 6% EC/ gal (6% EC) or

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Plum cluster (continued)

3 fl.oz 6.5%
EC/gal
(6.5% EC)
or
2.5 fl.oz 7-
7.5% EC/gal
(7-7.5% EC)
or
2 fl.oz 8.07%
EC/gal
(8.07% EC)
or
1.5 fl.oz 12%
EC/gal
(12% EC)
or
1 fl.oz 12.5%
EC/gal
(12.5% EC)
or
0.66 fl.oz
50% EC/gal
(50% EC)
or
0.007 lb/gal
(0.75 lb/gal
F1C)

IRAWAKA

Comstock mealy-
bug

[SLN]
1 lb/100 gal
[1,000 gal/
A]
(8 lb/gal EC)

SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.

ITBQALA

Lesser peach-
tree borer

1 lb/100 gal
(25% WP)
or
1.25 fl.oz
13.7% EC/gal
(13.7% EC)
or
--
(0.5% PrL)
or

Bark application. Spray trunk and lower branches. Repeat at 21 day intervals. To kill borers in trunks, insert the tube found on the side of the can of 0.5 percent pressurized liquid formulation into nozzle. Remove sawdust from borer holes in the trunk. Insert tube through borer hole and into tunnel. Spray 1 to 2 seconds. Remove tube and fill

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Plum cluster (continued)</u>		
	[MAI] 1.2 tsp actua- l*/gal (5% WP)	hole with pruning paint or seal- er. May be formulated with methoxy- chlor and captan.
IRAKBYA	San Jose scale 0.75 lb/100 gal (25% WP)	Use limited to CA. Foliar application. Tank mix with petroleum distil- late.
ITBQAH	Peachtree borer [MAI] 3 fl.oz 6.5% EC/gal (6.5% EC)	Bark application. Make 2 or 3 ap- plications to trunk, from ground to scaffold limbs, timed to coin- cide with moth flight. Formulated with carbaryl.
INASAVA	Plum curculio 0.625-0.9375 lb/100 gal (5 lb/gal EC)	Foliar application. Tank mix with methoxychlor.
IRAAABA ILAVAAA	Scales 2.5 fl.oz Spider mites 6.5% EC/gal (6.5% EC)	Postharvest application. Apply as soon as trees lose their leaves. May be formulated with one or a combination of: dicofol, methoxy- chlor, carbaryl, or captan.
	[MAI] 0.75 fl.oz 6% EC/gal (6% EC)	
/14013AA	<u>Potato</u>	8 ppm No preharvest interval through 3 pounds per acre for foliar appli- cation.
IRACAAA	Aphids (includ- 1-3 lb/A ing green (4-10% D) peach aphid or and potato 0.5-2.5 lb/A aphid) (25% WP)	Foliar application. For <u>blister beetles</u> and <u>mealybugs</u> , apply the higher dosage. For <u>false chinch bug</u> , apply the lower dosage. May be formulated with mancozeb, maneb, methoxychlor, carbaryl, rotenone, sulfur, or captan.
INBGAAA	Blister beetles or	
INAMCFA	Colorado potato 0.63-3 lb/A beetle (4.5-8 lb/gal EC)	
IQALAH	False chinch 40-57% EC)** bug	
IQAMAXA	Fourlined plant or bug 0.03 oz/100	
IVABAAA	Grasshoppers sq. ft	
INBPAZA	Japanese beetle (5% D) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Potato (continued)

Pest list continued from previous page.

IRAFAAA	Leafhoppers (including potato leaf- hopper)	0.75-0.84 tsp actual*/gal (25% WP) (4% WP/D)
IQAMARA	Lygus bugs	or
IRAWAAA	Mealybugs	0.05-0.3 oz/
ILAVAAA	Spider mites	gal
IQAQAAA	Stink bugs	[1 gal/100-
IMQAAAA	Thrips	435 sq. ft]
IRABAAA	Whiteflies	(2-5 lb/gal EC) (50-57% EC)**
		[MAI]
		0.9-3 lb/A
		or
		0.08-0.09 oz/
		100 sq. ft
		or
		0.03 oz/10 ft
		row
		(2-5.6% D)
		or
		0.7-0.8 tsp
		actual*/gal
		(4% WP/D)
		or
		0.5-1 lb/A
		(1-2 lb/gal
		EC)
		or
		6-15 tsp 7-
		12.5% EC/gal
		(7-12.5% EC)

Prune

See Plum cluster.

Pumpkin

See Cucumber cluster.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/04004AA <u>Quince</u>		8 ppm 3 day preharvest interval through 15 pounds per acre for foliar application.
IRACAA	Aphids	0.5-1 lb/100
ITBGAZA	Codling moth,	gal
IRAKBVA	Forbes scale' (crawlers)	(25% WP) or
ILAAABA	Mites	0.002-0.01
ITBGAQA	Oriental fruit moth	1b/gal (2-5 lb/gal
INASAVA	Plum curculio	EC)
ILAVAAA	Spider mites	(50-57% EC)** or
		0.625-1.875
		1b/100 gal
		or
		1.875-15 lb/A
		(5-8 lb/gal
		EC)
		(57% EC)**
		[MAI]
		2.5 fl.oz 7%
		EC/gal
		(7% EC)
		or
		1.5 fl.oz 12%
		EC/gal
		(12% EC)
IRAWAKA	Comstock mealybug	[SLN] 1 lb/100 gal [1,500 gal/A] (8 lb/gal EC) SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.

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<u>Site and Pest</u>		<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/14014AA	<u>Radish</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA	Aphids	1.2-2 lb/A	Foliar application.
ITBWAFa	Diamondback moth	(4-10% D) or	May be formulated with mancozeb, maneb, carbaryl, rotenone, sul- fur, or captan.
INAMADA	Flea beetles	0.5-2 lb/A	
IRAFAAA	Leafhoppers	(25% WP)	
ILAVAAA	Spider mites	or	
IMOAAAA	Thrips	0.94-2 lb/A (5-8 lb/gal EC) or 0.03 oz/100 sq. ft (5% D) or 0.04-0.25 oz/ gal [1 gal/100- 435 sq. ft] (2-5 lb/gal EC) (50% EC)** [MAI] 1.2-2 lb/A or 0.05 oz/100 sq. ft (4%, 5% D)	
	<u>Raspberry</u>		See Blackberry cluster.
/14015AA	<u>Rutabaga</u>		8 ppm 3 day preharvest interval through 2.5 pounds per acre for foliar ap- plication.
IRACAAA	Aphids	0.94-2.5 lb/A (4-5% D) (25% WP) (4.8-8 lb/gal EC) (57% EC)** or	Foliar application. May be formulated with mancozeb, maneb, carbaryl, or sulfur.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Rutabaga</u> (continued)		
	0.08-0.2 oz/ gal (4.4-5 lb/gal EC) (50-57% EC)**	
	[MAI] 1.25-2.5 lb/A (5% D) or 1-1.25 lb/A (2 lb/gal EC)	
	<u>Rye</u>	See Barley cluster.
/2700BAA	<u>Safflower</u>	0.2 ppm (seed) 3 day preharvest interval through 1.25 pounds per acre for foliar application.
IRACAAA IVABAAA IQAMARA	Aphids Grasshoppers Lygus bugs	0.475-1.25 lb/A (5-8 lb/gal EC) (9.3-9.79 lb/ gal RTU) (95% RTU)**
		Foliar application. Apply the liquid-ready to use formulations by ultra low volume equipment.
/14016AA	<u>Salsify</u>	8 ppm (including tops) 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA ITBWAFa	Aphids Diamondback moth	0.94-2 lb/A (4-10% D) (25% WP)
INAMADA IRAFAAA ILAVAAA IMQAAAA	Flea beetles Leafhoppers Spider mites Thrips	(5-8 lb/gal EC) or 0.03 oz/100 sq. ft (5% D) or 0.09-0.19 oz/ gal (2-4.4 lb/ gal EC) or
		Foliar application. May be formulated with mancozeb, maneb, carbaryl, rotenone, sul- fur, or captan.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Salsify (continued)</u>		
	[MAI] 1.2-2 lb/A (4-5% D)	
/14017AA <u>Shallot</u>		8 ppm 3 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA Aphids	0.94-2 lb/A	Foliar application.
IRAFAAA Leafhoppers	(4-5% D)	
ILAVAAA Spider mites	(25% WP)	
IMDAAA Thrips	(5-8 lb/gal EC) or 0.04-0.19 oz/ gal (2.2-4.4 lb/ gal EC)	
/24006AA <u>Sorghum</u>		8 ppm 7 day preharvest interval through 0.938 pound per acre for foliar application. Forage may be fed to livestock.
IRACAAA Aphids	0.583-0.938	Foliar application. Apply the
IVABAAA Grasshoppers	lb/A	liquid-ready to use formulations
IRACDNH Greenbug	(5-8 lb/gal EC)	by ultra low volume equipment.
IOAHAA Sorghum midge	(50% EC)** (9.3-9.79 lb/ gal RTU)	Apply when pests or damage first appear or at bloom.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/28023AA <u>Soybeans</u>		8 ppm (dry and succulent) 135 ppm (forage and hay) 7 day preharvest interval through 2 pounds per acre for foliar application.
IVABAAA Grasshoppers ITBCCCA Green clover-	0.562-2 lb/A (4-10% D) (25% WP)	Foliar application. Apply the liquid-ready to use formulations by ultra low volume equipment.
INBPAZJ Japanese beetle	(5-9.33 lb/	For <u>grasshoppers</u> , use lower rate.
INAPAFB Mexican bean beetle	gal EC) (50-54.6%	May be formulated with methoxy- chlor or sulfur.
ITBCCGA Soybean cater- pillar	EC)** (9 lb/gal	
ITBCATA Velvetbean caterpillar	SC/L) (9.3-9.79 lb/ gal RTU)	
	[MAI] 1.5-2 lb/A (4-5% D)	
/13024AA <u>Spinach</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar application.
ITBCAVA Alfalfa looper	0.5-2 lb/A	Foliar application.
IRACAAA Aphids	(4-10% D)	May be formulated with mancozeb, zineb, carbaryl, rotenone, sul-
IQAXAAA Lace bugs	(25% WP)	fur, or captan.
IRAFAAA Leafhoppers	(4.5-8 lb/gal	
IQAMARA Lygus bugs	EC)	
ILAVAAA Spider mites	(50-57% EC)**	
IMQAAAA Thrips	or 0.06-0.25 oz/ gal (2-5 lb/gal EC) (50-57% EC)**	
	[MAI] 1.2-2 lb/A or 0.07 oz/100 sq. ft (4-5% D) or 1.25 lb/A (1 lb/gal EC) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Spinach</u> (continued)		
	4.5-6 tsp 6- 12.5% EC/gal (6-12.5% EC)	
<u>Squash</u>		See Cucumber cluster.
/01016AA <u>Strawberry</u>		8 ppm 3 day preharvest interval through 2 pounds per acre for foliar ap- plication. Do not use malathion where cycla- men mite is a problem.
IRACAAA Aphids	1-2 lb/A	Foliar application.
IVAHABA Field crickets	(4-5% D)	May be formulated with one or a
IRAFAAA Leafhoppers	(4.5-8 lb/gal	combination of: dicofol, zineb,
(including	EC)	methoxychlor, dinocap, carbaryl,
potato leaf-	(50-57% EC)**	rotenone, sulfur, or captan.
hopper)	(8 lb/gal	
IMAAAEA Leafrollers	SC/L)	
(including	or	
strawberry	0.75-1.5 tsp	
leafroller)	actual*/gal	
IQAMARA Lygus bugs	or	
ILAAABA Mites (includ-	0.625-2 lb/A	
ing spider	(25% WP)	
mites such as	or	
twospotted	0.005-0.02	
spider mite)	lb/gal	
IRAKALA Rose scale	(2-5 lb/gal	
IRAEAAA Spittlebugs	EC)	
INASCQA Strawberry root	(50-57% EC)**	
weevil	or	
IMDAAAA Thrips	0.625-0.9375	
IRABAAA Whiteflies	lb/100 gal	
	(5 lb/gal EC)	
	(57% EC)**	
	or	
	2.5-3 fl.oz	
	25% EC/gal	
	(5% EC)	
	or	
	0.25 fl.oz	
	50.9% EC/gal	
	(50.9% EC)	
	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Strawberry (continued)

	0.25-0.67 fl.oz 55% EC/gal (55% EC) or 1.5 pt 56.5% EC/100 gal (56.5% EC)	
	[MAI] 0.003-0.005 lb/100 sq. ft or 1-2.5 lb/A (4-5% D) or 0.45-1.575 tsp actual*/ gal (5-7.5% WP) (3% WP/D) or 0.004-0.006 lb/gal (4-7.5% WP/D) or --	
	[dust] (3-7.5% WP/D) or 0.01 lb/gal or 1 lb/100 gal (1 lb/gal EC) or 1-2 lb/A (2 lb/gal EC) or 2.5 fl.oz 6.5-7.5% EC/ gal (6.5-7.5% EC) or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Strawberry (continued)

	1 fl.oz 10- 12.5% EC or 7.5% SC/L/ gal (10-12.5% EC) (7.5% SC/L) or 0.007 lb/gal (0.75 lb/gal F1C)	
INASCQA	Strawberry root weevil 1-2 lb/A (4-5% D) (25% WP) (5-8 lb/gal EC) (8 lb/gal SC/L) or 2.5-3 fl.oz 5% EC/gal (5% EC) [MAI] 1-1.6 lb/A (4% D)	Soil application. Apply to soil surface prior to planting and work into top 6 to 8 inches of soil. May be formulated with sulfur.

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/25002AF	<u>Sugar Beets</u>		1 ppm (roots) 8 ppm (tops) 3 day preharvest interval through 2.5 pounds per acre for foliar application. 7 day preharvest interval (if tops are used as food or feed) through 2.5 pounds per acre for foliar application.
IRACAAA	Aphids	0.475-2.5	Foliar application. May be applied by aircraft. The ready-to-use formulations are applied by ultra low volume equipment. May be formulated with sulfur.
ITBCCFA	Armyworm (including beet armyworm and yellow striped armyworm)	1b/A (25% WP) (5-8 lb/gal EC) (40-54.6% EC)**	
IRAFADA	Beet leafhopper	EC)**	
ITBCCSA	Cabbage looper	(8.9 lb/gal	
INAMACA	Cucumber beetle	SC/L)	
IVABAAA	Grasshoppers	(40% SC/L)**	
IQAMARA	Lygus bugs	(9.3-9.79 lb/gal RTU)	
ILAVAAA	Spider mites	gal RTU)	
IDAXACA	Sugar beet root maggot	(95% RTU)**	
		[MAI] 1.2-2 lb/A (4%, 5% D)	
		[SLN] 1.25-2 lb/A (25% WP)	SLN - Use limited to CT. Foliar application.
/14018AF	<u>Sweet Potato</u>		1 ppm 3 day preharvest interval through 1.88 pounds per acre for foliar application.
IRACAAA	Aphids	0.5-1.88 lb/A	Foliar application. For <u>morning-glory leafminer</u> , apply the higher dosage.
IRAFAAA	Leafhoppers	(4-10% D)	
ITAYADA	Morningglory leafminer	(25% WP) (5-8 lb/gal EC) or 0.12-0.18 oz/gal (5 lb/gal EC) (50% EC)** or	May be formulated with mancozeb, zineb, carbaryl, rotenone, sulfur, or captan.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Sweet Potato</u> (continued)		
	[MAI] 1-1.25 lb/A (4-5% D)	
/13025AA <u>Swiss Chard</u>		8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IRACAAA Aphids	1.2-1.75 lb/A	Foliar application.
INBGAAA Blister beetles	(4-10% D)	May be formulated with mancozeb,
INAMACA Cucumber bee-	or	maneb, carbaryl, rotenone, sul-
	tles	fur, or captan.
IRAFAAA Leafhoppers	0.5-1.5 lb/A (25% WP) or 0.94-2 lb/A (5-8 lb/gal EC) or 0.03 oz/100 sq. ft (5% D) or 0.04-0.2 oz/ gal (2-5 lb/gal EC) (50-57% EC)**	
	[MAI] 1-1.2 lb/A (4-5% D)	
<u>Tangelo</u>		See Grapefruit cluster.
<u>Tangerine</u>		See Grapefruit cluster.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/11005AA <u>Tomato</u>		8 ppm 1 day preharvest interval through 2 pounds per acre for foliar application (dust or spray). 3 day preharvest interval through 3.5 pounds per acre for foliar application in CA. 5 day preharvest interval through 3.5 pounds per acre for foliar application.
IRACAAA	Aphids	1-3.5 lb/A
ITBCCFA	Armyworm	(4-10% D)
INBGAAR	Blister beetles	or
ITBCCSA	Cabbage looper	0.5-2 lb/A
INAMCFA	Colorado potato beetle	(25% WP) or
IOAPABA	Drosophila	0.63-3.5 lb/A
ITBCCOA	Fall armyworm	(4.5-8 lb/gal
IQALAAH	False chinch bug	EC) (40-57% EC)
INAMADA	Flea beetles	000241-00047
IQAMAAH	Garden flea-hopper	or
INBPAZA	Japanese beetle	0.03-0.06 oz/
IQAXAAA	Lace bugs	100 sq. ft (5% D)
IMAAAGA	Leafminers (including serpentine leaf-miner)	(4% WP/D) or
IRAWAAA	Mealybugs	0.03-0.36 oz/
IRAXAAA	Psyllids	gal
IQAQAAA	Stink bugs	[1 gal/100- 435 sq. ft]
ILAVAAA	Spider mites (including twospotted spider mite)	(2-5 lb/gal EC) (50-57% EC)**
IMDAAA	Thrips	[MAI]
ITBCBOA	Tomato fruit-worm	0.5-2 lb/A or
ITBRAJA	Tomato hornworm	0.05-0.06 oz/
ILAJAAH	Tomato russet mite	100 sq. ft or
IRABAAA	Whiteflies	0.03 oz/10 ft row (2-5.6% D) or
		0.9-1.5 tsp actual*/gal (4%, 5% WP/D) or

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Appendix A-2

Listing of Active Ingredient(s) Which May Be Included in Tank Mixes

<u>Chemical Ccde</u>	<u>Common Name (source)</u>	<u>EPA Acceptable Common/Chemical Name</u>
081301	captan	--
034001	methoxychlor	methoxychlor, tech- nical
063503	petroleum distillate	--
069001	pyrethrins	--

-- Use Common Name

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Tomato</u> (continued)		
	1.5-3.5 lb/A (1-2 lb/gal EC) or 9-15 tsp 6-8.07% EC/gal (6-8.07% EC) or 6-9 tsp 12%, 12.5% EC/gal (12-12.5% EC)	
IRACAAA	Aphids	3.4-3.5 lb/A Use limited to CA.
ITBCCFA	Armyworm	(5-8 lb/gal Foliar application.
ITAAANA	Fruitworms (including tomato fruit-worm)	EC)
ILAVAAA	Spider mites	
/23027AA	<u>Vetch</u>	8 ppm (seed) 135 ppm (hay and straw) 7 day preharvest interval through 1.25 pounds per acre for foliar application. Forage may be fed to livestock.
IRACAAA	Aphids (includ- 0.937-1.25 ing pea aphid) lb/A	Foliar application.
IRAFAAA	Leafhoppers (4-10% D)	May be formulated with sulfur.
ITBLAWA	Omnivorous (25% WP)	
	leaftier (5-8 lb/gal EC)	
ILAVAAA	Spider mites	
INAGACA	Vetch bruchid (8 lb/gal SC/L)	
	[MAI] 1.2 lb/A (4% D)	

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/03009AA	<u>Walnut</u>		8 ppm No preharvest interval through 12.5 pounds per acre for foliar application.
IRACAA	Aphids (including walnut aphid)	1.5-12 lb/A (4-5% D) or	Foliar application. For <u>walnut husk fly</u> , may be mixed with bait. May be formulated with one or a combination of: carbaryl and sulfur.
ITBGAZA	Codling moth	1-2.5 lb/400-	
ILAAABA	Mites (including European red mite)	500 gal/A [air-carrier type ground equipment]	
IOBMAMA	Walnut husk fly	or 0.125-0.375 lb/100 gal [conventional ground equipment] (25% WP) or 0.125-3.125 lb/100 gal or 0.9375-12.5 lb/A (5-8 lb/gal EC) or 0.33 fl.oz 50% EC/gal (50% EC) or 1.25-2.5 lb/A (8 lb/gal SC/L) [MAI] 1.6-2.5 lb/A (5% D) or 2.5 fl.oz 6.5% EC/gal (6.5% EC)	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Walnut</u> (continued)		
IRAWAKA	Comstock mealy- [SLN] bug 1 lb/100 gal [1,250 gal/ A] (8 lb/gal EC)	SLN - Use limited to Madera, Fresno, Kings, Tulare and Kern counties of CA. Foliar application. Use intended exclusively for the Mealybug Eradication Project, Control and Eradication Unit, CA Department of Food and Agriculture. Apply by ground equipment.
/13027AA	<u>Watercress</u>	8 ppm 7 day preharvest interval through 2 pounds per acre for foliar application.
IRACAAA IOABADA	Aphids 1-1.75 lb/A Serpentine (5% D) leafminer or complex 0.5-1.25 lb/A (25% WP)	Foliar application.
IMDAAAA	Thrips or 0.94-2 lb/A (5, 8 lb/gal EC) (50% EC)** or 0.04-0.2 oz/ gal (2-4.4 lb/ gal EC)	
<u>Wheat</u>		See Barley cluster.
<u>(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)</u>		
/28037AA	<u>Commercial Orchard, Vine, and Vegetable Crops</u> (listed on registered labels)	CA Mediterranean fruit fly program. See individual crops listed in this entry for tolerance and preharvest interval information.
IOBMADA	Mediterranean [SLN] fruit fly 3 lb/A (25% WP)	SLN - Use limited to CA. Foliar application. Apply in a minimum of 10 gallons of water per acre by aircraft and a minimum of 75 gallons of water per acre. Repeat as needed.
IOBMAEA	Melon fly	
IOBMABA	Mexican fruit (5-8 lb/gal fly EC)	
IOBMAFA	Oriental fruit (57% EC)** fly	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Commercial Orchard, Vine, and Vegetable Crops (continued)

[SLN] 0.194 lb/A (25% WP) (5-9.33 lb/ gal EC)	SLN - Use limited to CA. Foliar application. Add a maximum of 9.6 fluid ounces of staleye's protein bait, nu-lure or other similar baits. Apply in a maximum of 2.9 gallons of water per acre by aircraft and a maximum of 39.9 gallons of water per acre by ground equipment. No dilution with water shall be used over urban areas. For aerial applications, apply at 6 to 10 day intervals. For ground applications, apply at 6 to 14 day intervals. Applications shall not be made when there is a 50 percent or more chance of rain occurring within 48 hours of scheduled treatment or scheduling problems or mechanical difficulties occur during the prescribed treatment cycle, treatment may be repeated in order to maintain the cycle sequence. When such events or adverse weather occurs, no more than one retreatment shall be made in the affected treatment area.
[ULV][SLN] 0.43-0.75 lb/A (8-9.33 lb/ gal EC)	SLN - Use limited to CA. Ultra low volume application. Apply to citrus. May be applied by aircraft. Add 1 pound of yeast hydrolysate or 1 quart sause base #2. Repeat as needed.

Refer to Field Crops (listed on registered labels) for additional information.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/280490A /28037AA	<u>Field Crops</u> (listed on registered labels)	See individual crops listed in this entry for tolerance and pre-harvest interval information.
IOAAAAA IOAMAAJ	Flies Mosquitoes (adults)	0.12-0.94 lb/A (5% D) (5-9.7 lb/gal EC) (9.33 lb/gal SC/L) (9.3-9.79 lb/gal RTU) (95% RTU)**

Outdoor treatment. Apply dusts with power dusters. Sprays may be applied by aircraft and ultra low volume equipment.

TERRESTRIAL NONFOOD CROP(Agricultural Crops)

/26003AA	<u>Tobacco</u>	N.F. 7 day preharvest interval through 1.56 pounds per acre for foliar application. Do not apply 5 days prior to topping or suckering plants.
IRACAAA	Aphids	0.6-1.56 lb/A (4-10% D) (5-8 lb/gal EC) (50-57% EC)** (8 lb/gal SC/L) [MAI] 0.16-0.32 lb/A (3% D)

Foliar application.
May be formulated with carbaryl.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/26003DA <u>Tobacco</u> (transplant beds)		N.F. Foliar application to transplant beds through 1.44 ounces per 100 square yards. Do not apply 3 days prior to planting.
IRACAA Aphids	0.48-1.44 oz/ 100 sq.yd (4-5% D) (5 lb/gal EC)	Foliar application to transplant beds.
<u>(Ornamental Plants and Forest Trees)</u>		
/31003AA <u>Ornamental Flowering Plants</u>		Do not allow spray to contact ferns, hickory, viburnum, lantana, crassula, or canaetri juniper as injury may result to plants. Do not apply to elms under conditions of drought, heat or disease.
/32001AA <u>Ornamental Woody Plants</u>		
IRACAA Aphids (includ-	0.5-2.5 lb/A	Foliar application. For <u>tent</u>
ing cherry	(4-5% D)	<u>caterpillar</u> , use lower rate. For
aphid, green	or	<u>pine needle scale</u> , use higher
apple aphid,	0.2-3.125 lb/	rate. For <u>scales</u> , apply when
rosy apple	100 gal	crawlers have settled. May be
aphid, snow-	(2-8 lb/gal	applied by mist blower. Repeat
ball aphid,	EC)	at 3 to 7 day intervals as need-
and woolly	(5-80%	ed.
apple aphid)	EC)**	May be formulated with captan,
ITBKAB Bagworms	(8 lb/gal	carbaryl, copper oleate, di-
ISBEAM Birch leafminer	SC/L)	chlone, folpet, kelthane, methoxy-
IQAUAC Box elder bug	(40%	chlone, nitro-octyl phenols, phal-
IOAHAS Boxwood leaf-	SC/L)**	an, piperonyl butoxide, rotenone
miner	(50% SC/L)**	and other cube resins, sulfur, or
IOABAM Chrysanthemum	or	zineb.
leafminder	7.5-8 lb/100	
IRAFAX Elm leafminer	gal	
ITBUDD European pine	(5-8 lb/gal	
shoot moth	EC)	
IQAMAX Fourlined leaf	or	
bug	0.05-1.25 oz/	
INBPZZ Japanese beetle	gal	
(adults)	(25% WP)	
IQAXAA Lace bugs	(4.3-5 lb/gal	
IRAFAA Leafhoppers	EC)	
(including	(5-57% EC)**	
rose leaf-	(5% SC/L)**	
hopper)	or	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Ornamental Flowering Plants cluster (continued)

Pest list continued from previous page.

INAMDHA	Locust leaf-miner	0.625 lb/100 gal
IRAWAAA	Mealybugs (including citrus mealybug)	or (25% WP) (4.3-5 lb/gal)
ILAAABA	Mites (including boxwood mite, European red mite, gall mite, honey locust mite, oak mite, red spider mite, southern red mite, spruce mite, and two-spotted spider mite)	EC) (5-57% EC)** (5% SC/L)** -- (4-5% D) (2% PrL) [MAI] 0.5-1.25 lb/A or 0.1 oz/100 sq.ft (4-5% D)
IRAFAJA	Potato leaf-hopper	or 0.18-0.48 lb/100 gal
IRAXAAA	Psyllids (including boxwood psylla)	or 0.25-0.8 oz/gal
IRAAABA	Scales (including azalea scale, bean scale, black scale, euonymus scale, fletcher scale, Florida red scale, juniper scale, magnolia scale, Monterey pine scale, oak kernes, oyster shell scale, pine needle scale, scurfy scale, soft brown scale, and wax scale)	gal (7-7.5% WP) (4-5% WP/D) or 0.5-2.5 lb/100 gal or 0.075-0.22 oz/gal (1-2 lb/gal EC) (7-15% EC)** or -- (2% PrL)
IQAMATA	Tarnished plant bug	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Ornamental Flowering Plants cluster (continued)

Pest list continued from previous page.

ITAUADA	Tent caterpillar	
IMDAAAA	Thrips	
IRABAAA	Whiteflies	

/33010AA Ornamental Lawns and Turf

INBPAZJ	Japanese beetle (adults)	4.4-17.6 lb/A (55% EC)**	Foliar application. Use higher rate for longer residual (to 10 years) control.
ITBMABA	Sod webworm		
INASBOA	Whitefringed beetle		
INBPAAA	White grubs		
INAVAAA	Wireworms		
ILAWAAA	Chiggers	1.66 lb/A	Foliar application. Spray thoroughly when insects or damage are first noticed. Sprinkle lightly with water to wash material onto crowns of plants. Do not water again for several days, then water to wash material off plants. Repeat if necessary.
IMNAAAA	Fleas	(50% SC/L)**	
IZZZCBA	Grass scale	or	
IRAFAAA	Leafhoppers	1.25-1.28 lb/100 gal/5,000 sq. ft (5 lb/gal EC) (57% EC)**	
ILAAACA	Ticks		
ISASAAA	Ants	0.75-0.9375 lb/100 gal (25% WP) (5-8 lb/gal EC) (50-57% EC)**	Soil treatment. Spray ant mounds thoroughly so that they are well soaked. Repeat in 10 to 15 days if needed.
		or	
		0.5-2.2 oz/gal (50-55% EC)**	
ILAVABA	Clover mite	1.6 oz/gal (5 lb/gal EC)	Foliar application. Repeat in 10 to 20 days.
		or	
		0.15 oz/gal (50% EC)**	
IRARABG	Ground pearls	1.87-5 lb/100 gal/A (25% WP) (5 lb/gal EC) (10-57% EC)**	Soil application. Make full coverage to soil surface when nymphs are in crawler stage. Wash into soil with additional water.
		or	

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Ornamental Lawns and Turf (continued)</u>		
	0.09 oz/5,000 sq. ft (5 lb/gal EC)	
IVAIAAA Mole crickets	[SLN] 2 lb/A (2% G)	SLN - Use limited to FL. Soil application; bait. Apply in late afternoon when rain is not forecast.
/32000DA <u>Ornamental Nursery Stock</u>		
IRAWAA Mealybugs	[SLN]	SLN - Use limited to CA.
IRAAABA Scales	0.625 lb/100	Foliar application. Apply to
IRABAAA Whiteflies	gal (25% WP)	nursery stock under hold order or quarantine. Apply to runoff.
/30059BA <u>Pine Seed Orchards</u>		
IMOBAA Slash pine thrips	[SLN] 5.72 lb/100 gal (57.2% SC/L)** or 3.43 lb/tree (57.2% SC/L)**	SLN - Use limited to FL. Floral application. Apply to female flower in slash pine seed orchards. Apply by mist blower or air blast equipment. Apply when female flower is in twig-bud stage. Repeat application in 7 days just prior to maximum flower maturation.
<u>(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)</u>		
/67000DA <u>Uncultivated Non-Agricultural Areas</u> (including barrier strips, ditch banks, non-crop areas, roadsides, and waste- lands)		
IRAFADA Beet leafhopper	0.563-2 lb/A	Foliar application. May be ap-
IDAMAJA Black grass bug	(5-9.7 lb/gal	plied by aircraft. The ready-to-
IVABAAA Grasshoppers	EC) (9 lb/gal SC/L) (9.3-9.79 lb/ gal RTU)	use formulations are applied by ultra low volume equipment. The emulsifiable concentrate formula- tions may be applied in 1 gallon of diesel fuel oil by aircraft or by turbine blower. Repeat as nec- essary.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Uncultivated Non-Agricultural Areas (continued)

[SLN][ULV] 0.45-1.25 lb/A (5 lb/gal EC) (95% RTU)**	SLN - Use limited to CA, OR, and TX. Foliar application. Apply by aircraft. Apply by ultra low volume equipment.
[SLN][MAI] 0.25 lb/A (75% WP)	SLN - Use limited to MT. Foliar application. Apply in 10 to 20 gallons of water per acre by aircraft. Formulated with acephate.

GREENHOUSE FOOD CROP(Agricultural Crops)

/16002CA	<u>Asparagus</u> (greenhouse)	2 ppm (corn, fresh including sweet corn plus corn with husks removed)
/15027CA	<u>Beans</u> (greenhouse)	8 ppm (asparagus, beans, beets and tops, corn forage and grain, cucumber, peas, pepper, spinach, squash, and tomato)
/28002CA	<u>Beets</u> (greenhouse)	No preharvest interval through 3.75 grams per gallon for foliar application to crops grown in container.
/28005CA	<u>Corn</u> (greenhouse)	Do not use any part of treated crops for food or feed.
/10010CA	<u>Cucumber</u> (greenhouse)	
/28016CA	<u>Peas</u> (greenhouse)	
/11003CA	<u>Peppers</u> (greenhouse)	
/13024CA	<u>Spinach</u> (greenhouse)	
/10013CA	<u>Squash, Summer</u> (greenhouse)	
/11005CA	<u>Tomato</u> (greenhouse)	
IRACAAA	Aphids	[SLN]
INAMBDA	Asparagus beetle	3.75 g/gal (25% WP)
ILAAABA	Mites	
IMAAAAA	Thrips	
IRAAABA	Whiteflies	

SLN - Use limited to CA.
Foliar application to research crops grown in containers in and around greenhouses of Del Monte Corporation. Apply using hand held spray and spray to the point of runoff. Repeat as needed. (Claim for control of asparagus beetle is effective only for asparagus.)

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/15027CA /10001CA /10012CA	<u>Beans</u> (greenhouse) <u>Melons</u> (greenhouse) <u>Squash</u> (greenhouse)	8 ppm 1 day preharvest interval through 0.18 ounce per gallon for foliar application to greenhouse grown plants.
IRACAAA INAMACA IRAFAAA ILAVAAA	Aphids Cucumber bee- tles Leafhoppers Spider mites	0.18 oz/gal (50% EC)** Foliar application to greenhouse grown plants.
Refer to Asparagus (greenhouse) cluster for additional information.		
<u>Beets</u> (greenhouse)	See Asparagus (greenhouse) cluster.	
/13003CA	<u>Celery</u> (greenhouse)	8 ppm 7 day preharvest interval through 0.18 ounce per gallon for foliar application to greenhouse grown plants.
IRACAAA ILAVAAA	Aphids Spider mites	0.18 oz/gal (50% EC)** Foliar application to greenhouse grown plants.
/13004CA	<u>Cole Crops</u> (including broccoli, cabbage, kale, mustard greens, and turnips) (greenhouse)	5 ppm (broccoli) 8 ppm (cabbage, kale, mustard greens, and turnips) 7 day preharvest interval through 0.18 ounce (actual) for foliar ap- plication to greenhouse grown plants.
IRACAAA ITBCCSA ITBJAHA IRAFAAA	Aphids Cabbage looper Imported cab- bageworm Leafhoppers	0.18 oz/gal (50% EC)** Foliar application to greenhouse grown plants.
<u>Corn</u> (greenhouse)	See Asparagus (greenhouse) cluster.	

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<u>Site and Pest</u>		<u>Dosages and</u>	<u>Tolerance, Use, Limitations</u>
		<u>Formulation(s)</u>	
/10001CA	<u>Cucumber</u> (greenhouse)		8 ppm 1 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use per 50,000 cubic feet for green- house fumigation.
IRACAAA	Aphids	0.94-1.25 lb/	Foliar application to greenhouse grown plants.
ITBCCFA	Armyworm	100 gal	
ITBCCSA	Cabbage looper	(25% WP)	
INAMACA	Cucumber bee-	(5 lb/gal EC)	Greenhouse fumigation. Apply by thermal fog generator.
	flies	or	
IMDAAA	Earwigs	0.18 oz/gal	
IQAMAHA	Garden flea-	(50% EC)**	
	hopper		
IRAFAAA	Leafhoppers	16.7 fl.oz	
IRAWAAA	Mealybugs	10% RTU/	
ILAAABA	Mites	50,000 cu.ft	
ILAVAAA	Spider mites	(10% RTU)	
IMDAAA	Thrips		
IRABAAA	Whiteflies		

Refer to Asparagus (greenhouse) cluster for ad-
ditional information.

/11001CA	<u>Eggplant</u> (greenhouse)		8 ppm 3 day preharvest interval through 0.18 ounce for foliar application to greenhouse grown plants.
IRACAAA	Aphids	0.18 oz/gal	Foliar application to greenhouse grown plants.
ILAVAAA	Spider mites	(50% EC)**	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/13015CA <u>Endive</u> (greenhouse)		8 ppm 7 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use for 50,000 cubic feet for greenhouse fumigation.
IRACAAA Aphids ITBCCFA Armyworm ITBCCGA Cabbage looper ILAAABA Mites IOABADA Serpentine	0.94-1.25 1b/A (25% WP) (5 lb/gal EC)	Foliar application to greenhouse grown plants.
	leafminer complex	Greenhouse fumigation. Apply by thermal fog generator.
IMDAAAA Thrips	50,000 cu.ft	
IRABAAA Whiteflies	(10% RTU)	
/13020CA <u>Lettuce</u> (greenhouse)		8 ppm 7 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use per 50,000 cubic feet for greenhouse fumigation to <u>leaf lettuce</u> . 14 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use per 50,000 cubic feet for greenhouse fumigation to <u>head lettuce</u> .
IRACAAA Aphids ITBCCFA Armyworm ITBCCSA Cabbage looper IOABADA Serpentine	0.94-1.25 lb/ 100 gal (25% WP) (5 lb/gal EC)	Foliar application to greenhouse grown plants.
	leafminer complex	
ILAVAAA Spider mites	0.18 oz/gal	
IYDAAAA Thrips	(50% EC)**	
IRABAAA Whiteflies	16.7 fl.oz 10% RTU/ 50,000 cu.ft (10% RTU)	Greenhouse fumigation. Apply by thermal fog generator.

Melons (greenhouse)

See Beans (greenhouse) cluster.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>	
/16003CA	<u>Mushrooms</u>	8 ppm 1 day preharvest interval through 1.5 pounds per acre or 1.28 ounces per 60 foot-single house for mushroom and mushroom-house application.	
IOBFAAJ	Darkwinged fungus gnats (including sciarid mushroom flies) (adults)	1.2-1.28 oz/ 60 ft-house or 1.12 oz/2,000 sq. ft or	Mushroom and mushroom house application. Apply evenly but not directly to bed areas. Apply every 3 to 4 days after pests appear. May be formulated with piperonyl butoxide or pyrethrins.
IOAYAAJ	Humpback flies (including phorid mushroom flies) (adults)	0.5-1.5 lb/A (4-6% D) or 1.5 lb/A [125-130 gal/A]	
ILAAABA	Mites (including pigmy mites)	or 0.55-0.63 oz/ 1,000 sq. ft [3-4 gal/ 1,000 sq. ft] (25% WP) (5, 8 lb/gal EC) (50% EC)**	
		[MAI] 1.28-2.4 oz/ 60 ft-house or 0.48-0.64 oz/ 1,000 sq. ft or 0.4-0.6 lb/A (4% D)	
IOBFAAC	Darkwinged fungus gnats (including sciarid mushroom flies) (adults)	[SLN] 2.5 oz/3 gal/ 1,000 sq. ft of bed (25% WP)	SLN - Use limited to CA. Drench application to mushroom compost. Apply at first and between breaks. Water bed as needed.

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/14011CA	<u>Onion</u> (greenhouse)	8 ppm 3 day preharvest interval through 0.18 ounce per gallon for foliar application to greenhouse grown plants.
IM0AAAA	Thrips	0.18 oz/gal (50% EC)** Foliar application to greenhouse grown plants.
	<u>Peas</u> (greenhouse)	See Asparagus (greenhouse) cluster.
/28017CA	<u>Peppers</u> (greenhouse)	8 ppm 3 day preharvest interval through 0.18 ounce per gallon for foliar application to greenhouse grown plants.
IRACAAA	Aphids	0.18 oz/gal (50% EC)** Foliar application to greenhouse grown plants.
	Refer to Asparagus (greenhouse) cluster for additional information.	
/14013CA	<u>Potato</u> (greenhouse)	8 ppm No preharvest interval through 0.18 ounce per gallon for foliar application to greenhouse grown plants.
IRACAAA	Aphids	0.18 oz/gal (50% EC)** Foliar application to greenhouse grown plants.
IRAFAAA	Leafhoppers	
IRAWAAA	Mealybugs	
/14014AA	<u>Radish</u> (greenhouse)	8 ppm 7 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use per 50,000 cubic feet for greenhouse fumigation.
IRACAAA	Aphids	0.94-1.25 lb/ 100 gal (25% WP) (5 lb/gal EC) or 0.18 oz/gal (50% EC) Foliar application to greenhouse grown plants.
INAMADA	Flea beetles	
ILAAABA	Mites	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Radish</u> (greenhouse) (continued)		
	16.7 fl.oz 10% RTU/ 50,000 cu.ft (10% RTU)	Greenhouse fumigation. Apply by thermal fog generator.
<u>Spinach</u> (greenhouse)		See Asparagus (greenhouse) cluster.
<u>Squash</u> (greenhouse)		See Beans (greenhouse) cluster.
<u>Squash, Summer</u> (greenhouse)		See Asparagus (greenhouse) cluster.
/11005CA <u>Tomato</u> (greenhouse)		8 ppm 1 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use per 50,000 cubic feet for greenhouse fumigation.
IRACAAA	Aphids	0.94-1.25 lb/
ITBCCFA	Armyworm	100 gal
ITBCCSA	Cabbage looper	(25% WP)
ITBCABA	Cutworms	(5 lb/gal EC)
IOAPABA	Drosophila	or
IQAMABA	Garden flea-hopper	0.18 oz/gal (50% EC)**
IRAWAAA	Mealybugs	
IQABADA	Serpentine leafminer complex	16.7 fl.oz 10% RTU/ 50,000 cu.ft (10% RTU)
ILAVAAA	Spider mites	
IMDAAA	Thrips	
ILAJAHA	Tomato russet mite	
IRABAAA	Whiteflies	

Foliar application to greenhouse grown plants.

Greenhouse fumigation. Apply by thermal fog generator.

Refer to Asparagus (greenhouse) cluster for additional information.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/13027CA <u>Watercress</u> (greenhouse)		8 ppm 7 day preharvest interval through 1.25 pounds per 100 gallons for foliar application to greenhouse grown plants or 16.7 fluid ounces of 10 percent liquid-ready to use per 50,000 cubic feet for greenhouse fumigation.
IRACAAA Aphids	0.94-1.25 lb/	Foliar application to greenhouse grown plants.
ILAAABA Mites	100 gal	
IOABADA Serpentine leafminer complex	(25% WP) (5 lb/gal EC)	
IMDAAAA Thrips	16.7 fl.oz 10% RTU/ 50,000 cu.ft (10% RTU)	Greenhouse fumigation. Apply for thermal fog generator.

GREENHOUSE NONFOOD CROP(Agricultural Crops)

/28083CA <u>Epcot Display Crops</u> (not for consumption)		For use only in "The Land", EPCOT Center, Lake Buena Visa, FL. Crops (including resulting produce) not listed on the federal label must be destroyed following harvest and IN NO CASE SHOULD BE CONSUMED.
IRACAAA Aphids	[SLN]	SLN - Use limited to FL. Greenhouse fog or mist application.
ILAVAAA Spider mites	10% finished	
IMDAAAA Thrips	spray	
IRABAAA Whiteflies	[1 fl.oz/ 3,000 cu.ft] (10% RTU)	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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(Ornamental Plants and Forest Trees)

/32000CA

Ornamental Plants

IRACAAA	Aphids	[SLN]	SLN - Use limited to FL.
IOABAMA	Chrysanthemum leafminer	1 lb/50,000 cu. ft	Fog application to greenhouse grown ornamentals.
ILAVABA	Spider mites	(10-95% RTU)	
IMODAAA	Thrips		
IRABAAA	Whiteflies		
IJCAAAA	Millipedes	1.67 lb/5,000 sq. ft	Outdoor treatment. Apply to soil surface where pest congregate.
IIFAAEA	Sowbugs	(4-5% D)	Repeat at 7 to 10 day intervals.
IMCAAAA	Springtails	or 0.22-0.56 lb/5,000 sq. ft (5 lb/gal EC) (50% EC)**	

DOMESTIC OUTDOOR(Household)

/630030A

Domestic Dwellings, Outdoor

Dilutions may be made in water, diesel oil, or fuel oil. Avoid oil base applications to valuable ornamentals as injury may occur. Do not apply malathion to freshly white-washed surfaces. Allow 14 days after whitewashing before applying. Do not allow sprays to contact automobile paint.

ISASAAA	Ants	3% finished spray	Outdoor residual treatment. Apply as paint, spray, or fog. For flying insects, apply to the outside surfaces of screens, doors, and window frames. Areas around lights, porches or vestibules should also be treated. For crawling insects, apply to non-vegetative areas, the ground adjacent to buildings, foundations, and lower side walls. For <u>ants</u> , thoroughly wet hills and runways. Repeat as needed.
ISAAACA	Bees	(5 lb/gal EC)	May be formulated with one or a combination of: d-trans alle-
IQAUACA	Boxelder bug	(50% EC)**	
ILAMAQA	Brown dog tick	(4.5 lb/gal SC/L)	
ILAWAAA	Chigger mites	(3% RTU)	
ILAVABA	Clover mites	or	
IVAHAAA	Cockroaches	2 pt 5% EC/gal	
IVAHAAA	Crickets	(5% EC)	
IMDAAA	Earwigs	or	
IMNAAA	Fleas		
IOAAAA	Flies		
ISBIADA	Hornets		
INBPADA	June beetles		
IJCAAAA	Millipedes		
ITAAABA	Moths		

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Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Domestic Dwellings, Outdoor (continued)

Pest list continued from previous page.

IKAAAAA ISAAADA ISBIAEA	Spiders Wasps Yellowjackets	[MAI] 0.95-5% finished spray (8-23% EC)** (6-30% SC/L)** (2-5% RTU) (0.95-3% PrL)	thrin, propoxure, fenthion, MGK 264, diazinon, piperonyl butoxide, pyrethrins, or vaponal.
IOAAAAA	Flies	1-2% finished spray [1 gal/1,000 sq. ft or painted sur- faces] or [2 gal/1,000 sq. ft on un- painted sur- faces] (25% WP) (4-8 lb/gal EC) (10-57% EC)** (4-4.5 lb/gal SC/L) (20-50% SC/L)**	Outdoor residual treatment. Ap- ply as a spray, bait spray, or as a fog. For bait sprays, add corn syrup, molasses (without preserva- tive), or sugar. Apply around yards, homes, walls, fences, and around garbage cans. Repeat as needed.
IOAAAAA IOAMAAJ	Flies Mosquitoes (adult)	2-5% finished spray (2-8 lb/gal EC) (14.25-57% EC)** [MAI] 2% finished spray (2% RTU)	Outdoor residual treatment. Ap- ply to building foundations, shrubs, low trees, and lawn areas. Avoid applying oil based sprays to ornamental plants. May be formulated with piperonyl butoxide and pyrethrins.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Domestic Dwellings, Outdoor</u> (continued)		
IJCAAAA IIFAAEA IMCAAAA	Millipedes Sowbugs Springtails 1.67 lb/5,000 sq. ft (4-5% D) or 0.22-0.56 lb/5,000 sq. ft (5 lb/gal EC) (50% EC)**	Outdoor treatment. Apply to soil surface where pests congregate. Repeat at 7 to 10 day intervals.
IOAMAAA	Mosquitoes -- (10% D)	Outdoor treatments to navy bases. Apply lightly around doors, windows, porches, and other flat surfaces where pests are known to alight.

AQUATIC FOOD CROP

General Warnings and Limitations: Malathion is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water except as specified on the label. Do not contaminate water by cleaning of equipment or disposal of wastes.

(Agricultural Crops)

/01010AA	<u>Cranberry</u>	8 ppm 3 day preharvest interval through 2.5 pounds per acre for foliar application. Do not apply close to or during bloom and berry-set period. Do not apply when foliage is wet. 14 day preharvest interval through 2.5 pounds per acre for water treatment (SLN).
ITBGBJA	Blackheaded fireworm	1.2-2.5 lb/A (4%, 5% D)
ITBMAGA	Cranberry fruitworm	or 0.625 lb/A (25% WP)
IRAFAAA	Leafhoppers	or 0.01-0.02 lb/gal
IRAEAAH	Spittlebugs (nymphs)	(2, 4.4 lb/gal EC) or
		Foliar application. May be formulated with one or a combination of: methoxychlor or sulfur.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Cranberry</u> (continued)		
	0.9375-2.5 lb/A (4.5-8 lb/gal EC) (50% EC)** or 2.5 qt 40% EC/A (40% EC) or 1 lb/A (8 lb/gal SC/L)	
	[MAI] 1.2-2 lb/A (4% D) or 2 tbs 12.5% EC/gal (12.5% EC)	
PZZZZZA	Plant regulator (SLN) (enhance fruit color) 2.5 lb/A (8 lb/gal SC/L)	SLN - Use limited to OR. Water treatment. Apply the first warm day in September (above 75 F (43.6 C)) 14 to 21 days prior to harvest, through the sprinkler system. All irrigation systems used for this purpose must have a check valve and anti-siphon de- vice to prevent backflow into the water source.
/24004AA	<u>Rice</u>	8 ppm 7 day preharvest interval through 2 pounds per acre for foliar ap- plication.
IVABAAA	Grasshoppers [ULV] 0.58 lb/A (9.3-9.7 lb/ gal RTU)	Foliar application. Apply by air- craft with ultra low volume equip- ment.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Rice</u> (continued)		
IOARABA Rice leafminer	1.125-1.75 lb/A (5-8 lb/gal EC) (50% EC)** (8 lb/gal SC/L)	Foliar application. May be applied by aircraft. Apply when first leaf blades break the surface of water or when insects or damage first appear. Restrict water flow from treated fields for 48 hours after application.
IQAQAMA Rice stinkbugs	0.475-1.56 lb/A (5-8 lb/gal EC) (50% EC)** (8 lb/gal SC/L) (9.3-9.79 lb/gal RTU)	Use limited to TX and LA. Foliar application. May be applied by aircraft. The ready-to-use formulations are applied with ultra low volume equipment. Apply early milk-dough stage. Restrict water flow from treated fields for 48 hours.
IIBAABA Tadpole shrimp	1.875-2 lb/A (5-8 lb/gal EC)	Use limited to CA. Foliar application. Restrict water from from treated fields for 48 hours.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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AQUATIC NONFOOD

(Aquatic Sites)

General Warnings and Limitations: Malathion is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water except as specified on the label. Do not contaminate water by cleaning of equipment or disposal of wastes. To be applied only by trained personnel of public health organizations, mosquito abatement districts, public mosquito control programs, and professional pest control operators.

/650380A Intermittently Flooded Areas

Malathion will kill certain species of fish, particularly in shallow water.

IOAMAAC	Mosquitoes (larvae)	0.4-0.51 lb/A (6% G) (4.8-8 lb/gal EC) (10-50% EC)** (4.5 lb/gal SC/L) (50% SC/L)** (3% RTU)	Water application. Apply in sufficient water or oil. May be applied by aircraft.
IOAMAAB	Mosquitoes (eggs)	16 gal 1.9% EC/acre foot	
IOAMAAC	Mosquitoes (larvae)	(1.9% EC)	
IOAMAAC	Mosquitoes (larvae)	[SLN] 5-6.25 lb/100 lb sand and 1.25 lb hysill [10 lb/A] (8 lb/gal EC)	SLN - Use limited to DR. Water application.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/650210A	<u>Irrigation Systems</u>	Make 1 application in the fall after irrigation has ceased.
IOAMAAJ	Mosquitoes (adults)	[SLN] 1.25 lb/mile of pipeline (5% D)
IOAMAAC	Mosquitoes (larvae)	SLN - Use limited to CA. For application to underground irrigation pipelines after the irrigation season is over and the water flow has stopped, river bottom borrow pits or depressions where flood conditions exist. Use a blower to establish an air-flow through the pipeline, then meter the malathion dust into the airstream until the dust appears at the most distant opening. Close the pipe opening to contain the dust.
/650260A	<u>Sewage Systems</u>	
IOBCAAC	Moth flies (larvae)	a minimum of 1,000 ppm (45.78% EC) Trickling filter sewage disposal system treatment. Determine the rate of flow with an accuracy of 5 percent by the use of a weir or any conventional method. Calculate the amount to add to the sewage stream. Enough sewage must be treated to provide complete contact over the entire filter bed. Add 1 gallon of 45.78 percent emulsifiable concentrate to each 500 gallons per minute of sewage flow. The total amount should be added over a period of 1 minute. This treatment is sufficient to kill 90 percent of the larvae providing the air temperature is 80 F (26.7 C) or more. At cooler temperatures, a lower percentage of kill will result. Repeat in 5 days. After second treatment, weekly inspection should be made repeated as needed.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Sewage Systems</u> (continued)		
	3% finished spray [1 gal/1,000 sq.ft] (3% RTU)	Residual treatment to sewage filters and other structural elements. Apply using a flat spray nozzle to give residual depositing. Extend the treatment from the edge of the filter to a distance of 20 feet. Repeat as needed. Apply in a concentration of 1 ppm, not to exceed 2 ppm.
<u>FORESTRY</u>		
/30001AA /30009AA	<u>Forest Trees</u> (including Deciduous Trees)	
ITAUADA	Tent caterpillar	1.25 lb/100 gal (5-8 lb/gal EC)
/30039AA /30043AA /30064AA	<u>Douglas-fir</u> <u>True Fir</u> <u>Spruce</u>	Foliar application. Make thorough coverage application before larvae reach third instar.
ITBUASA	Spruce budworm	0.77-0.99 lb/A (9.33 lb/gal EC) (9.3-9.79 lb/gal RTU) (95% RTU)**
/30046AA	<u>Hemlock</u>	Foliar application. Apply by aircraft with ultra low volume equipment. Apply when the highest percentage of larvae are in the fifth instar. Apply when wind is calm and air temperature is below 68 F (20.0 C).
ITANAMA	Hemlock looper	0.475-0.612 lb/A (9.33-9.7 lb/gal EC) (9.3-9.79 lb/gal RTU) (95% RTU)**

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	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/30051AA	<u>Larch</u>		
ITAGACA	Larch case-bearer	0.475-0.612 lb/A (9.33 lb/gal EC) (9.3-9.79 lb/gal RTU) (95% RTU)**	Foliar application. May be applied by air. The ready-to-use formulations are applied by ultra low volume equipment. Apply in spring as soon as larvae break hibernation and begin feeding on new foliage.
/30059AA	<u>Pines</u>		
/30100AA	<u>Eastern Pine</u>		
/30103AA	<u>Red Pine</u>		
ITBWAHA	Pine needle leafminer	0.9375 lb/A (5-8 lb/gal EC)	Foliar application. For <u>pine needle leafminer</u> , apply by ground or air equipment in 25 gallons of water. Make applications when air is calm and temperature is below 68 F (20.0 C). Apply when 75 percent of larvae have left overwintering mines. For <u>pine tortoise scale</u> , apply by aircraft in 2 gallons of water per acre when crawlers emerge. If infestation is heavy, repeat in 7 days.
IRAHBDA	Pine tortoise scale		
ISAOAGA	Red-headed pine sawfly	0.5 lb/A (5-8 lb/gal EC)	Foliar application. Apply by mist blower in 2 gallons of water per acre when egg hatch is complete.
ISADAMA	European pine sawfly	0.59-0.765 lb/A (9.33-9.7 lb/gal EC) (9.3-9.79 lb/gal RTU) (95% RTU)**	Foliar application. May be applied by air. May be applied by ultra low volume. For <u>European pine sawfly</u> , apply when larvae are in first or second instar and before they are 0.5 inch in length. For <u>Saratoga spittlebug</u> , apply when 95 percent of the population has become adults.
IRAEACO	Saratoga spittlebug		

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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INDOOR

General Warnings and Limitations: After using malathion indoors, ventilate thoroughly before occupying enclosed spaces.

(Agricultural Crops)

/03001EA	<u>Almonds</u>	8 ppm (almonds) 50 ppm (hulls) Stored commodity treatment through 0.156 pound per 10,000 pounds of shelled and in-shell almonds for dust formulations. Stored commodity treatment through 0.26 pound per 10,000 pounds of in-shell almonds for emulsifiable concentrate formulations.
ITBMCHA INARAFA	Indianmeal moth	0.156 lb/10,000 lb (2-6% D)
	Merchant grain moth	0.156-0.26 lb/10,000 lb (5-8.45 lb/gal EC)
		Stored commodity treatment. Apply to shelled and in-shell almonds. Apply for thorough coverage.
		Stored commodity treatment. Apply to in-shell almonds. Use a suitable applicator that regulates the rate of application to the flow of the almonds. Avoid spraying a fine mist that drifts away. Shield the nozzle against wind and air currents.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/24001EA /24002EA /28040EA /24003EA /24004EA /24005EA /24006EA /27011EA /24007EA	<u>Barley</u> <u>Corn, Field</u> <u>Field or Garden Seeds</u> <u>Oats</u> <u>Rice</u> <u>Rye</u> <u>Sorghum</u> <u>Sunflower</u> <u>Wheat</u>	8 ppm Stored commodity treatment through 0.66 pound per 1,000 bushels. Grain surface treatment through 0.33 pound per 1,000 square feet. Residual spray or fog treatments through 4 percent finished spray. Malathion may be used under the requirements of the khapra beetle quarantine, where water or diesel emulsions are indicated as prescribed by current quarantine instructions.
INAMCMA	Cereal leaf beetle	0.625 lb/1,000 bu (57% EC) Stored commodity treatment. This treatment may qualify grains to be moved out of a <u>cereal leaf beetle</u> quarantine area. Consult local, state, or federal officials before moving grain from an infested area.
IVAABA IMAAFA	Cockroaches Stored product insects	[MAI] 3.74-4% finished spray [2 fl.oz/1,000 cu.ft] (3.74-4% RTU) Fog treatment to the overspace in filled or partially filled grain storage structures. Close all windows and doors. Repeat as needed. Formulated with one or a combination of: methoxychlor, methylene chloride, piperonyl butoxide, or pyrethrins.
IMAAFA	Stored product insects	0.54-0.66 lb/1,000 bu (1-10% D) (4.8-8.45 lb/gal EC) (50-57% EC)** 0.6-0.624 lb/1,000 bu (1-10% D) Stored commodity treatment. Apply as the grain or seed is being loaded or turned into final storage. Apply emulsifiable concentrates in 2 to 5 gallons of water per 1,000 bushels. Stored commodity treatment. Apply to the grain or seed surface in trucks or wagons prior to storage. Spread evenly over the surface of the grain or seed and cut in, to a depth of 6 inches with a shovel. Further mixing will be accomplished during the usual process of unloading and loading.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Barley cluster (continued)

0.48 oz/50 bu (1% D)	Stored commodity treatment. Apply to grain in filled combine hoppers. The usual process of hauling and conveying will distribute the dust evenly by the time it reaches final storage.
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2-3% finished spray (4.8-9.39 lb/ gal EC) (50-57% EC) (2% SC/L) or 2 gal 3% RTU/ 1,000 sq. ft (3% RTU)	Residual spray or fog prior to storage. Thoroughly clean surfaces and remove debris before treatment. Thoroughly spray walls, floors, and machinery in grain elevators, spray truck beds, boxcars, and ship holds to the point of runoff. Apply the 2 percent soluble concentrate/liquid undiluted.
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May be formulated with piperonyl butoxide and pyrethrins.

[MAI]
2-2.88%
finished
spray
(19% EC)**
(2-2.88% RTU)

[MAI] 1 gal 2.85% RTU/1,000 sq. ft (2.85% RTU)	Empty storage bin treatment. Apply after the bins have been emptied and thoroughly cleaned. Apply to all surfaces with particular attention to cracks and crevices. Repeat as needed. Formulated with piperonyl butoxide and pyrethrins.
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ITBMCHA

Indianmeal moth 0.3-0.33 lb/ 1,000 sq. ft (1-10% D) (4.8-8.45 lb/ gal EC) (50-57% EC)**	Stored commodity treatment. Apply as a surface treatment immediately after the grains are stored. Apply emulsifiable concentrates in 1 to 2 gallons of water. Repeat as needed. May be formulated with piperonyl butoxide and pyrethrins.
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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Barley cluster (continued)

	[MAI] 4% finished spray [0.5 gal/ 1,000 sq.ft] (4% RTU)	Residual spray. Apply as a coarse wet spray to clean wall surfaces in grain storage structures. Formulated with methoxychlor, methylene chloride, piperonyl butoxide, and pyrethrins.
/28040EB IMAAFA	(Field or Garden Seeds) Stored product insects 3.125 oz/10 lb of captan seed protec- tant (8 lb/gal F1C)	Seed storage treatment. Combine captan or captan methoxychlor mix with a small amount of water to form a thin paste. Add the malathion to this paste. Then stir the combined paste into the required amount of water depending on the type of slurry equipment used. Tank mix with methoxychlor and/or captan.
/01014EA	<u>Grapes</u> (raisins)	FAR Raisin tray storage through 1.4 grams per 144 square feet of tray paper. Screen raisins to remove dead insects and other debris before storing.
ITBMCHA INARAGA	Indianmeal moth Sawtoothed grain beetle 1.4 g/144 sq.ft of paper (5-8 lb/gal EC) or -- (1.8-9% Impr)	Raisin trays. For protection up to 6 months in storage.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/28015EA <u>Peanuts</u>		8 ppm Stored commodity treatment through 1.7 pounds per 15 tons. Supplemental surface spray through 1.65 percent finished spray. Prestorage residual warehouse spray through 3.4 percent finished spray.
IMAAFA Stored product insects	1.25 lb/15 tons (1-6% D) or 1.25-1.7 lb/5 gal/15 tons (4.8-8.45 lb/gal EC) (57% EC)**	Stored commodity treatment to farmers stock peanuts. Apply uniformly using equipment that regulates the rate of application to the flow of peanuts going into storage. When using emulsifiable concentrates apply a coarse spray by using low pressure. Shield the nozzle against wind and air currents.
	1.65% finished spray [2 gal/1,000 sq. ft] (25% WP)	Supplemental surface spray. Apply the first treatment as soon as the bin is filled and leveled, but not later than the first week in October. Apply the second treatment 1 month later followed by treatments at 2 month intervals. Use a piston type sprayer equipped with an agitator and a nozzle capable of delivering a coarse spray. Repeat 2 months later if warm temperatures prevail. Otherwise delay further treatments until late winter. Do not disturb the surface. Lay boards over the surface during inspection and subsequent treatments.
	3-3.4% finished spray [2 gal/1,000 sq. ft] (4.8-8.39 lb/gal EC) (57% EC)**	Prestorage residual warehouse spray. Apply as a coarse spray. Clean the warehouse thoroughly of trash and remains of old peanuts 7 to 14 days before the new crop is stored. Apply to the interior of the empty warehouse, especially cracks and protected places. Treat the outside walls to a height of 6 to 8 feet and to the

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Peanuts (continued)

ground up to 6 feet from the warehouse.

(Processed or Manufactured Products, and Food or Feed Container or Dispensers)

/43014EA

Bagged Citrus Pulp

50 ppm (citrus, pulp, dehydrated (CT.F.))
Exposed bag surface treatment through 0.375 pound per 1,000 square feet. Residual warehouse spray through 3.3 percent finished spray.

IMAAFA

Stored product insects

initial treatments
0.373-0.375 lb/1,000 sq. ft
and
subsequent treatments
0.27-0.28 lb/1,000 sq. ft
(2-6% D)

Exposed bag surface area treatment. Make 2 separate applications initially when bagged citrus pulp is stored, then 1 application each month thereafter throughout the storage period.

initial treatments
2.25-3% finished spray
[2 gal/1,000 sq. ft]
and
subsequent treatments
1.5-1.6% finished spray
[2 gal/1,000 sq. ft]
(25% WP)
(8-8.45 lb/gal EC)

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Bagged Citrus Pulp</u> (continued)		
	3.3% finished spray [2 gal/1,000 sq. ft] (5 lb/gal EC)	Residual warehouse spray. Apply to the point of runoff before bagged citrus pulp is stored. Thoroughly spray all surfaces. Apply to outside walls to a height of 6 to 8 feet and the ground to a distance of 6 feet from the warehouse.
<u>Cattle Feed Concentrate Blocks</u> (non-medicated)		10 ppm Feed block paper treatment through 7.5 percent finished spray. Prestorage residual warehouse spray through 2.4 percent finished spray.
Cigarette beetle	2.4% finished spray (5-8 lb/gal EC)	Prestorage residual warehouse spray. Thoroughly clean storage areas and remove and burn all debris and sweepings. Apply thoroughly.
	7.5% finished spray [1.4 qt/1,000 sq. ft] (5 lb/gal EC)	Feed block paper treatment. Treat the paper on the side next to the feed concentrate.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>(Pets and Domestic Animals)</u>		
/53001IA	<u>Beef Cattle</u>	4 ppm (fat, meat, meat byproducts) No preslaughter interval through 1 pound per dust bag for animal dust bag treatment. No preslaughter interval through 1.27 percent finished spray for animal treatment. No preslaughter interval through approximately 2 percent finished spray for animal backrubber treatment. Do not treat young animals under 3 months of age. Do not treat non-lactating dairy animals with 14 days of freshening.
/50004IA	<u>Dairy Cattle</u> (non-lactating)	
/53003IA	<u>Horses</u> (including ponies)	
IOAUAEA	(Face fly)	Animal dust bag treatment. Dust bag should be made continuously accessible to the animals. Restock bags as frequently as necessary.
IOAUADA	Horn fly	
IMAAADA	Lice	
IOAUADA	Horn fly	0.4-1 lb/dust bag (4%, 5% D) 0.48-0.08 oz/animal (4-5% D) or 0.48-0.96% finished spray (25% WP) (4.3-8 lb/gal EC) (2-57% EC)** [MAI] -- (4% D) or 0.625-0.8% finished spray (2 lb/gal EC)

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Beef Cattle cluster (continued)</u>		
IMAAADA Lice	-- (4-8% D) or 0.48-0.7% finished spray (25% WP) (4.3-8 lb/gal EC) (2-57% EC)**	
	[MAI] -- (4% D) or 0.48% finish- ed spray (2 lb/gal EC)	
IOAUADA (Horn fly) IMAAADA (Lice)	approximately 2% finished spray [1 backrub- ber/34-45 animals] (5-8 lb/gal EC) (2-57% EC)** (2-10% SC/L) (2-2.21% RTU)	Animal backrubber treatment. Use fuel oil as a carrier. For use in all types of backrubbers and face oilers. Do not over satur- ate. Backrubbers and oilers should be made continuously acces- sible to the animals. Recharge every 14 to 21 days. May be formulated with one or a combination of MGK 326, MGK 264, or methoxychlor.
	[MAI] approximately 2% finished spray (2 lb/gal EC) (10% EC)** (5% SC/L)** (2% RTU)	
ILAAACA Ticks (includ- ing Gulf Coast tick and spinose ear tick)	0.45-1.27% finished spray (25% WP) (4.3-5.3 lb/ gal EC) (2-57% EC)** or	Animal treatment. Apply for com- plete coverage. Repeat at 14 day intervals as needed. For <u>Gulf Coast tick and spinose ear tick</u> apply at low pressure to each ear and to head, neck and shoulder areas. May be formulated with methoxy- chlor or sulfur.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Beef Cattle cluster (continued)

	[MAI] -- (4% D)	
/53003JA	(Horses (including ponies))	
IOAAAAA	Flies	[MAI] Animal treatment.
IOAAAFa	Gnats	0.5% finished Formulated with piperonyl butox-
IOAMAAA	Mosquitoes	spray ide and pyrethrins.
	[2-4 fl.oz/ adult horse] or [1-2 fl.oz/ pony] (0.5% RTU)	
/53001IA	<u>Beef Cattle</u>	4 ppm (fat, meat, meat byprod-
/53005IA	<u>Sheep</u>	ucts) Animal dip or spray treatment through 1.25 gallons 4.3 percent emulsifiable concentrate per 100 gallons of water. Observe toxaphene limitations.
ILASADA	Itch mite family	[MAI] Animal dip or spray treatment. 1.25 gal 4.3% Apply to animals as a dip or a EC/100 gal spray-dip machine. One thorough (4.3% EC) application is usually sufficient. Make a second application if needed 10 days later. Formulated with toxaphene.
/54002IA	<u>Cats</u>	Do not treat puppies or kittens under 4 weeks of age.
/54003IA	<u>Dogs</u>	
IMNAAA	Fleas	-- Animal treatment. Apply dusts or (4-6% D) sprays for thorough coverage.
ILASAA	Itch mite family	or Closely examine animals before re-
IMAAADA	Lice	0.54-0.81 oz/ treatment. If retreatment is nec-
ILAAACA	Ticks (including brown dog tick)	gal essary allow 7 days between treat-
	(4.3-8 lb/gal EC) (50-57% EC)**	ments. If animals run freely treatments may be required every 14 to 21 days. If animals are confined to an area free of pests no retreatments may be necessary. May be formulated with sulfur.
	[MAI] -- (4% D)	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Cats</u> cluster (continued)		
	0.21-0.36 oz/ gal (1.15 lb/gal EC) (15.34-56.5% EC)**	Animal treatment. Apply as a dip, spray, or sponge bath. Bathe animal in a shampoo prior to treatment. Do not make more than 1 application every 7 to 28 days.
	[MAI] 0.25-0.5% finished spray (0.5% RTU) (0.25-0.5% PrL)	Animal treatment. Apply as a mist spray. Beginning at the tail, spray up to the back of the neck and including legs and underbody, until the coat is slightly damp. For longhaired animals, rub hand against the lay of the hair, spraying directly behind the hand, so the mist reaches the dog's skin. Avoid spraying eyes, face, and scrotum. A 20 to 30 second application is sufficient to treat a 25 pound animal. Repeat at 7 day intervals. For <u>ticks</u> , locate <u>ticks</u> and spray freely, thoroughly wetting the <u>ticks</u> . Formulated with one or a combination of: methoxychlor, essential oils, MGK R-11, carbaryl, MGK 264, chlorbisan, piperonyl butoxide, pyrethrins, or rotenone.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/55001IA <u>Chickens</u> /55002IA <u>Ducks</u> /55003IA <u>Geese</u> /55008IA <u>Turkeys</u>		0.1 ppm (eggs) 4 ppm (poultry (fat, meat, and meat byproducts)) No preslaughter interval through 1 to 1.5 gallons of 0.6 percent finished spray per 100 birds for animal treatment. No preslaughter interval through 3.75 gallons of 0.267 percent finished spray per 100 birds for tail dipping. No preslaughter interval through 0.375 pound per 50 birds for self dusting animal treatment.
IMHAAAA Chewing lice ILAHABA Chicken red mite ILADADA Northern fowl mite	-- or 0.64 oz/100 birds (4-8% D) [MAI] -- (4% D) 0.4-0.6% finished spray [1-1.5 gal/100 birds] (25% WP) (4.3-8 lb/gal EC) (4-80% EC)**	Animal treatment. Apply directly to individual birds (including areas of vent, fluff and underwings) by means of a shaker can or rotary duster. Repeat in 4 to 8 weeks or when necessary. Treatment is supplemental to premise treatment for <u>chicken red mite</u> . May be formulated with sulfur. Animal treatment. Spray birds directly. Repeat in 4 to 6 weeks or when necessary. Treatment is supplemental to premise treatment for <u>chicken red mite</u> .
IMHCAEA Chicken body louse ILADADA Northern fowl mite IMHCABA Shaft louse	0.267% finished spray [3.75 gal/100 birds] (5 lb/gal EC) (4-57% EC)**	Animal treatment, tail dipping. Hold bird by wings and dip 3 to 4 inches of tail into emulsion. Treat vent and surrounding areas. Repeat in 7 to 10 days if needed.
IMHAAAA Chewing lice ILADADA Northern fowl mite	dust box 0.64-0.8 oz/box/30 hens (4-5% D)	Animal treatment. Allow hens to dust themselves freely. Dust boxes should measure 18 inches by 12 inches by 3 inches. Remove boxes when dust has been used.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Chickens cluster (continued)</u>		
IMAAADA (Lice)	[MAI] dust box 2.24 oz/bu of fine dust or ashes (4% D)	Animal treatment. Keep this mixture in a box accessible to the birds at all times. Dust the powder into the nests at frequent intervals. Formulated with sulfur.
IMNCADA Sticktight flea	natural soil wallows 0.3-0.375 lb/ 50 birds or dust box 0.6-0.75 lb/ box/100 birds (4-5% D)	Animal treatment. Allow birds to dust themselves freely. Dust boxes should measure 2 feet by 3 feet by 1 foot. Repeat in 28 days and then as often as necessary.
	1.2-1.6 oz/ 100 chicks (4-5% D)	Animal treatment. Distribute the dust evenly in each corner of the brooder house. Also apply liberally to walls, ceiling, and adjacent areas.
/500031A Dairy Cattle (lactating)		0.5 ppm (milk, fat) Do not apply during milking or within 5 hours of milking.
IDAUAADA Horn fly	0.06-0.08 oz/ animal (4-8% D) [MAI] 0.08 oz/animal (4% D)	Animal treatment. Apply thoroughly to the poll, neck, and back. Repeat at 14 day intervals. May be formulated with methoxychlor.

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<u>Site and Pest</u>		<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/53002IA	<u>Goats</u>		4 ppm (fat, meat, meat byproducts)
/53003IA	<u>Sheep</u>		No preslaughter interval through 5 percent dust (goats) and 8 percent dust (sheep) and 0.65 percent finished spray (goats and sheep) for animal treatment. Do not treat animals under 1 month of age.
IMAAADA	Lice	--	Animal treatment. Apply by hand
ILAAACA	Ticks	(4-8% D)	or power duster or spray for thorough coverage. Repeat after 14 to 21 days if needed.
IMAAADA	Lice	0.48-0.65%	May be formulated with sulfur.
IOATABA	Sheep ked	finished	
ILAAACA	Ticks	spray	
		(25% WP)	
		(4.3-5 lb/gal	
		EC)	
		[MAI]	
		--	
		(4% D)	
/53006IA	<u>Hogs</u>		4 ppm
			No preslaughter interval through 8 percent dust or 0.65 percent finished spray for animal treatment.
			Do not treat animals under 1 month of age. After treatment, hogs should be kept out of the sun or wind for a few hours.
			Avoid contamination of feed, feed containers and watering troughs.
IMAAADA	Lice	--	Animal treatment. Apply for complete coverage to animals, pens, and litter. One treatment is usually sufficient. Repeat if needed. For the <u>itch mite family</u> , treat the entire herd. A second treatment may be required 10 days after the first treatment.
		(4-8% D)	May be formulated with sulfur.
		[MAI]	
		--	
		(4% D)	

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
<u>Hogs (continued)</u>		
ILASAAA Itch mite family IMAAADA Lice	0.48-0.65% finished spray (25% WP) (4.3-8 lb/gal EC)	
/55006IA <u>Pigeons</u>		4 ppm (poultry (fat, meat, meat byproducts) No preslaughter treatment through 4 percent dust for animal treatment.
IMHAAA Chewing lice ILAHABA Poultry lice	-- (4% D)	Animal treatment. Apply thoroughly.
<u>(Animals and Their Man-made Premises)</u>		
/52000JA <u>Animal Premises</u> (including /54003JA Dairy and Livestock Barns, /52000JA Stables and Pens, Feed Rooms, Poultry Houses, Manure Piles, Garbage Cans, Garbage Dumps, Kennels, and Rabbits on Wire)		0.5 ppm (milk fat) 0.1 ppm (eggs) 4 ppm (fat, meat, meat byproducts) Premise treatment through 1.5 ounces of dry formulation and 3.56 percent finished spray.
IOAAAA Flies	1-3% finished spray paint- ed surfaces [1 gal/1,000 sq. ft] or unpainted surfaces [2 gal/1,000 sq. ft] (1% G) (25% WP) (4-8 lb/gal EC) (10-57% EC)** (4-4.5 lb/gal SC/L) (20-50% SC/L)	Premise treatment. Apply as a spray or fog. Sugar, molasses, or corn syrup may be added to sprays. Apply in and around buildings which house animals. Apply where pests alight or congregate such as walls, ceilings, stanchions in dairy barns, fences, manure piles, and around garbage cans. Repeat as needed. Do not apply to freshly white-washed surfaces. Allow 14 days after whitewashing before applying. Do not apply 1 percent granular in dairy barns.

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MALATHION

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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Animal Premises (continued)

IOAAAAC	Flies (maggots) same as above	Manure treatment. Apply as a drench over the surface of manure or poultry droppings, dump sites, and garbage heaps. In loafing sheds, spray the dry bedding within 18 inches of the walls and around upright braces. Repeat as needed.
IOAAAAJ IOAAAAC	Flies (adults) 0.01-0.25 oz/ Flies (maggots) 500 sq. ft or 0.8-1.5 oz/ 500 sq. ft (1.25-4% D) (2% G) [MAI] 0.01-0.3 oz/ 500 sq. ft or 0.8-1.2 oz/ 500 sq. ft (1% G) (1% Cr)	Premise treatment. For light populations of adults, apply the low range in strips. For adults and maggots apply to manure and wet places using the high range scattering thoroughly. Do not feed floor sweepings to livestock. In poultry houses where poultry is in cages use on walkways, feed rooms, and egg houses. For poultry on litter, apply outside building or in yards where poultry cannot feed. May be formulated with sulfur.
/52000JA IOAAAAA IOAMAAA	(Stables and Barns) Flies [MAI] Mosquitoes 1-3.56% finished spray (21.037-50% SC/L) (1-3.56% RTU)	Premise treatment. Envelope the area in a fine fog or mist. Formulated with one or a combination of: lethane, lethane 384, MGK 264, piperonyl butoxide, or pyrethrins.
/53001JA	<u>Beef Cattle - Feed Lots and Holding Pens</u>	4 ppm (fat, meat, meat byproducts) Outdoor treatment through 0.61 pound per acre.
IOAAAAJ IOAMAAA	Flies (adults) 0.44-0.61 lb/A (9.33 lb/gal EC) (50% SC/L)** (9.3-9.7 lb/ gal RTU) (95% RTU)**	Outdoor premise treatment. May be applied by ultra low volume equipment.

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<u>Site and Pest</u>		<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/54002JA	<u>Cat</u> (sleeping quarters)		
/54003JA	<u>Dog</u> (sleeping quarters)		
IMNAAAA	Fleas	0.64-1.92 oz/ 1,000 sq. ft (4-6% D)	Animal premise treatment. Apply to pet quarters, basements, lawns, and yards, and under houses. Remove manure and debris before treatment. Repeat treatment in 21 to 28 days if needed.
IMNAAAA	Fleas	2.3-4.33 oz/ gal/1,000	Animal premise treatment. Apply to pet quarters. Spray bedding
IOAAAAA	Flies	sq. ft	cracks, crevices and flooring
ILAAACA	Ticks	(1.15-8 lb/ gal EC) (50-57% EC)**	thoroughly as often as needed. May be formulated with one or a combination of: stabilene, methoxychlor, essential oils, MGK
		[MAI]	R-11, carbaryl, MGK 264, chlor-
		0.25-0.5%	bisan, piperonyl butoxide, pyre-
		finished	thrins, or rotenone.
		spray	
		(5% RTU)	
		(0.25-0.5%	
		PrL)	
/55000JA	<u>Poultry House</u>		0.1 ppm (eggs) 4 ppm (poultry (fat, meat, and meat byproducts) Premise treatment through 3.3 percent finished spray. Roost treatment through 6 percent finished spray. Range treatment through 1 pound per acre. Range pen treatment through 0.8 ounce per 20 square feet.
IMHAAAA	Chewing lice	1-16 oz/100	Premise treatment. Apply to lit-
ILAHABA	Chicken red	sq. ft	ter and floor space, and to
	mite	(1.25-10% D)	nests, roosts, and adjacent
ILADADA	Northern fowl	[MAI]	areas. Apply with a rotary hand
	mite	1.1-1.28 oz/	duster or by sprinkling from a
		100 sq. ft	can or other container.
		(4% D)	May be formulated with sulfur.

EPA Compendium of Acceptable Uses

MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Poultry House (continued)

IMHAAAA	Chewing lice	0.82-1% finished	Premise treatment. Apply liberally to litter, walls, ceiling, roost nests, and adjacent areas.
ILAHABA	Chicken red mite	spray	
ILAOADA	Northern fowl mite	(25% WP)	Apply with a high pressure sprayer. Force spray into cracks and crevices. The soluble concentrate/liquid is diluted in kerosene or other distillates.
IOAAAAA	Flies	(4.3-8 lb/gal EC) (4-80% EC)** (6% SC/L)**	
ILACABA	Fowl tick	2.4-3.3% finished spray (4.3-5 lb/gal EC) (10-57% EC)** (6% SC/L)**	
IMHAAAA	Chewing louse	0.94-4% finished	Roost paint treatment. Apply with a brush to all possible roosting places. One application is usually sufficient. Control should be achieved in 4 to 7 days. Examine birds 14 to 21 days after treatment. Make the second application if needed.
ILAHABA	Chicken red mite	spray [1 pt/150 ft of roost] (4.33-8 lb/gal EC) (4-57% EC)** (3-4% RTU) or 1 pt 6% SC/L/ 2.25 ft of roost (6% SC/L)	
ILAWAAA	Chigger mites	0.54-1 lb/A (4, 5% D) (4.3-8 lb/gal EC)	Range treatment. Treat the range thoroughly 24 hours prior to placing poultry on range. Repeat at 14 to 21 day intervals.
IMNCADA	Sticktight flea	0.6-0.8 oz/20 sq. ft (4-5% D)	Poultry range pen treatment. Repeat in 28 days and then as often as necessary.

EPA Compendium of Acceptable Uses

MALATHION

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
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(Agricultural Premises and Equipment)

/400040A	<u>Cull Fruit and Vegetable Dumps</u>	Dumps should not be over 18 inches deep. Do not feed treated fruits and vegetables.
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INBJACA	Driedfruit bee-tle	0.9% finished spray	Dump treatment.
IOAPABA	Drosophila flies	[8-10 gal/100 sq.ft] (5-8 lb/gal EC) (57% EC)**	

(Household)

/630010A	<u>Domestic Dwellings, Indoor</u>		
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ISASAAA	Ants	--	Indoor treatment. Apply dusts liberally and finished sprays by paint brush or as a coarse spray.
ILAMAQA	Brown dog tick	(4-5% D)	
INATAFA	Carpet beetle	or	Apply to window sills, screens, cracks, and crevices, around doors, baseboards, storage areas, bookcases, under sinks, and other areas frequented by or where pests are noticed.
IBJAATA	Centipedes	1.6-5%	
ITBSABA	Clothes moths	finished	
ILAVABA	Clover mite	spray	
IVABAAA	Cockroaches	(4.3-5 lb/gal EC)	
IVAHAAA	Crickets	(5-57% EC)**	
IMDAAAA	Earwigs	(4-4.5 lb/gal)	May be formulated with one or a combination of: lethane, propoxure, MBK 264, diazinon, piperonyl butoxide, or pyrethrins.
IMNAAAA	Fleas	SC/L)	
IOAAAAA	Flies	(30% SC/L)**	
IOAMAAA	Mosquitoes	(3% PrL)	
ITAAABA	Moths		
IJEBAAA	Scorpions		
IMBPACA	Silverfish	[MAI]	
IKAAAAA	Spiders	0.7-5%	
IMAAFA	Stored product insects	finished spray (8-23% EC)** (0.7-3.09% RTU) (2-5% PrL)	
IOAAAAA	Flies	1:9	Indoor space spray. Direct spray towards the upper portion of room to saturate the atmosphere.
IOAMAAA	Mosquitoes	(10% EC)	
		[MAI] 2-5% finished spray (2% RTU) (4-5% PrL)	Spray selected surfaces such as doors and windows, doorsills, and window frames where pests congregate. Keep the area closed for 10 to 15 minutes. Sweep up dead insects.

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Domestic Dwellings, Indoor (continued)

May be formulated with piperonyl butoxide or pyrethrins.

(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)

/680000A

Wide Area and General Outdoor Treatments

ISASAA	Ants	1:5	Outdoor treatment. Apply to garbage dumps, sewer manholes, wet wells, garbage can storage areas, and around building foundations. May be formulated with methoxychlor, MGK 264, piperonyl butoxide, pyrethrins, and vaponax.
IVAAAB	Cockroaches	(3.14% EC) or 1:4 (15.2% EC) (13% EC) or 1:26-1:13 (50% SC/L)	
		[MAI]	
		1:7 (8% EC) or 1:10 (11.7% EC)	
IOAIAAJ	Biting midges (adults)	2-5% finished spray	
IOAAAAJ	Flies (adults)	[0.275-3	
IOAAAFJ	Gnats (adults)	gal/A]	
IOAMAAJ	Mosquitoes (adults)	(5-8 lb/gal EC)	
ITAAABJ	Moths (adults)	(10-57% EC)** (9.3-9.33 lb/gal SC/L) (50% SC/L)** (2.5-3.8% RTU) (3 g/100 ml RTU)	
		[MAI] up to 5% finished spray [0.5-3 gal/A] (1.8-46.5% SC/L)** (1.5-5% RTU)	

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Wide Area and General Outdoor Treatments (continued)

	1.2% finished spray [60-100 gal/hr] (15.2-57% EC)**	Outdoor treatment. Apply with a mist blower covering a swath width of up to 200 feet and maintaining a vehicle speed of 3 to 5 miles per hour. When treating dense vegetation, the vehicle speed should be reduced to 3 miles per hour or less and swath width reduced to 100 feet. Where vegetation is tall direct the mist to the upper part of the vegetation and allow the mist droplets to fall down into the trees and bushes. When applying during hot dry conditions swath width should not exceed 100 feet due to rapid evaporation.
IDAMAAJ	Mosquitoes (adults)	[SLN] 0.5 lb/A (5% D) [SLN] 0.2-0.4 lb/A (5% D) [ULV] 3-3.5 oz/A (9.3, 9.33 lb/gal SC/L) [ULV] see table (9.3 lb/gal SC/L) (95% RTU)
		SLN - Use limited to CA. Outdoor treatment. Apply by aircraft. Apply to shrubbery and vegetation where mosquitoes rest.
		SLN - Use limited to TX. Outdoor treatment. Apply by turbulent air duster or other suitable ground application equipment. Apply during peak mosquito activity periods to shrubbery, grasses, fields, vacant lots, alleyways, and other areas where pests are known to congregate.
		Ultra low volume application. Aerial application over cities, towns and other areas where automobiles, trailers, trucks, and pleasure boats are present. Do not apply when winds are at or above 10 miles per hour or temperatures are above 82 F (27.8 C).
		Ultra low volume application. Nonthermal aerosol. Over a 300 foot swath can be achieved by using the following flow rates at the indicated vehicle speeds:

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MALATHION

Site and Pest Dosages and Tolerance, Use, Limitations
Formulation(s)

Wide Area and General Outdoor Treatments (continued)

<u>Vehicle Speed</u> <u>(miles per hour)</u>	<u>Flow Rate</u> <u>(ounces actual</u> <u>per minute)</u>	<u>Maximum Flow</u> <u>Rate (pounds</u> <u>actual per hour)</u>
5	1.16-5	9.33
10	2.3-5	18.66
15	3.48-7.5	28
20	4.65-10	37.32

[SLN][ULV] SLN - Use limited to TX.
 0.19-0.23 Ultra low volume application. Ap-
 1b/A ply by fixed wing aircraft flying
 (95% SC/L) less than 150 miles per hours.

[SLN][ULV] SLN - Use limited to NJ.
 0.15 lb/qt Ultra low volume application. Ap-
 fuel oil/A ply by fixed wing aircraft flying
 (95% SC/L) less than 150 miles per hour.

IOAUHA Stable fly [ULV] Ultra low volume application.
 see table Nonthermal aerosol. Over a 300
 (9.3, 9.33 foot swath can be achieved by
 1b/gal SC/L) using the following flow rates at
 the indicated vehicle speeds.

<u>Vehicle Speed</u> <u>(miles per hour)</u>	<u>Flow Rate</u> <u>(ounces actual</u> <u>per minute)</u>	<u>Maximum Flow</u> <u>Rate (pounds</u> <u>actual per hour)</u>
5	2.5	9.33
10	5	18.66

(Commercial and Industrial Uses)

/43011GA Bagged Flour
 /43003GA Packaged Cereals
 /43042GA Pet Foods and Feed Stuff

IMAAFA Stored product 2.17-3.3% Residual spray treatment. Apply
 insects finished to boxcars before loading and
 spray transporting. Clean, remove, and
 (5-8 lb/gal burn all sweeping and debris.
 EC) Spray the walls to the point of
 (50-57% EC)** runoff. Let the sprayed car
 stand empty with the doors open
 [MAI] until the spray has thoroughly
 2% finished dried. Line the walls and floors
 spray of the boxcar with kraft paper
 (2% RTU) before loading.

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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Bagged Flour cluster (continued)

May be formulated with piperonyl butoxide and pyrethrins.

/43002JD
/43002GA
/43016JD
/43016GA

Cereal Processing PlantsDry Milk Processing Plants

Avoid contamination of food, utensils, milk, milk equipment, and water. Do not use in milk processing rooms.

INATAHA

Black carpet
beetle

[MAI]
2% finished
spray
(2% RTU)

INATAQA

Trogoderma
species

Residual and space spray treatment. Residual spraying: Apply as a coarse spray at the rate of 1 gallon per 1,000 square feet. Apply to all sections of the plant and warehouse such as cracks, crevices, corners, edges of floors, baseboards, floors, under storage platforms, false ceilings, under and behind processing equipment, and to either areas in which milk powder or other material may accumulate. Spray screens and frames on doors and windows.

Boxcars: Apply to all cleaned cars at the rate of 1 gallon per 1,000 square feet. After spraying floors and walls line with kraft paper. Repeat as needed. Space spraying: For areas which restrict individual movement a space spray may be used. Apply with a fog generator. Enclose all open containers and equipment before treatment.

Formulated with MGK 264, piperonyl butoxide, and pyrethrins.

/43016JD

(Dry Milk Processing Plants)

INATAHA

Black carpet
beetle

3% finished
spray
(5 lb/gal EC)
(57% EC)**

INATAQA

Trogoderma
species

Residual spray treatment. Apply to all sections of the plant and warehouses where pests hide. Apply to cracks, corners, edges of floors, lower parts of walls, floors under storage platforms, and underneath and behind protect places.

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MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/77000JB	<u>Commercial Establishments,</u>	FAR
	<u>Edible</u>	No preprocessing interval through
/72000JB	<u>Eating Establishments, Edible</u>	5 percent dust or 3 percent finished
/71000JB	<u>Food Processing Plants,</u>	spray for crack and crevice
	<u>Edible</u>	treatment or indoor fog or mist
		treatment.
ISASAAA	Ants	Use limited to Professional Pest
INATAFA	Carpet beetle	Control Officers.
IVAAABA	Cockroaches	Indoor crack and crevice treat-
IVAHAAA	Crickets	ment. Apply in small amounts di-
IMPBACA	Silverfish	rectly into cracks and crevices.
IKAAAAA	Spiders	For dust, a bulbous duster or
IMAAFA	Stored product	other suitable equipment and for
	insects	spray use a pin stream of finish-
		ed spray. Cracks and crevices
		include points such as expansion
		joints between different elements
		of construction or between equip-
		ment bases and the floor, wall
		voids, motor housing junction
		boxes or switch boxes, conduits
		or hollow equipment legs where
		the pests hide. Sprays may be
		mixed in a combination of 4 parts
		kerosene type solvent and 1 part
		aromatic hydrocarbon type sol-
		vent.
		May be formulated with one or a
		combination of: fenthion, piper-
		onyl butoxide, pyrethrins, or
		vapona.
IZZZAKA	Drosophila	[MAI]
IOAAAAA	Flies	2-3% finished
IOAAFA	Gnats	spray
IOAMAAA	Mosquitoes	[0.5-1 gal/
IOAZAAA	Skipper flies	64,000
IMAAFA	Stored product	cu. ft]
	insects	(3% SC/L)
		(2-3% RTU)
		Indoor fog or mist treatment.
		Cover all equipment and apply
		when plants are not in operation.
		Thoroughly clean before reuse.
		The building must be vacated be-
		fore the application begins.
		Close door and windows and shut
		off ventilating fans. Apply with
		conventional thermal, mechanical,
		or compressed air equipment ad-
		justed to deliver a fine mist or
		fog. Force the fog or mist at an
		upward angle distributing it uni-
		formly throughout the entire
		area.
		Formulated with one or a combina-
		tion of: lethane, piperonyl
		butoxide, pyrethrins, or vapona.

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MALATHION

	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/77000JC	<u>Commercial Establishments,</u> <u>Inedible</u>		
/72000JC	<u>Eating Establishments, Inedible</u>		
/71000JC	<u>Food Processing Plants,</u> <u>Inedible</u>		
ISASAAA	Ants	--	Indoor residual spray. For
INATAFA	Carpet beetle	(5% D)	sprays apply as a coarse spray to
IVAAABA	Cockroaches	or	baseboard areas, around water
IVAHAAA	Crickets	2-5% finished	pipes, surfaces behind and be-
IMPBACA	Silverfish	spray	neath sinks, lockers, tables,
IKAAAAA	Spiders	(5-8 lb/gal	pallets, and similar areas where
IMAAFA	Stored product	EC)	insects hide or through which
	insects	(10-57% EC)**	they may enter. Repeat as need-
		(4.5 lb/gal	ed. Sprays may be mixed in a
		SC/L)	combination of 4 parts kerosene
		(10-30%	type solvent and 1 part aromatic
		SC/L)**	hydrocarbon type solvent.
		(2.5-3% RTU)	May be formulated with one or a
		[MAI]	combination of: fenthion, diazi-
		0.5-5%	non, piperonyl butoxide, pyre-
		finished	thrins, or vapona.
		spray	
		(8-19% EC)**	
		(0.5-5% RTU)	
		(2% PrL)	
IOAHABA	Drosophila	6.6% finished	Indoor treatment. Paint all
	flies	spray	doors and window screens of wine-
		(5 lb/gal EC)	ries and processing plants.
		(57% EC)	
IMOHABA	Drosophila	[MAI]	Indoor fog or mist treatment.
	flies	2-3% finished	Cover all equipment and apply
IOAAAAA	Flies	spray	when plants are not in operation.
INABABA	Furniture	[0.5-1 gal/	Thoroughly clean before reuse.
	beetle	64,000	The building must be vacated be-
IOAAFA	Gnats	cu. ft]	fore the application begins.
INATALA	Hide beetle	(3% SC/L)	Close door and windows and shut
INATAKA	Larder beetle	(2-3% RTU)	off ventilating fans. Apply with
IOAMAAA	Mosquitoes		conventional thermal, mechanical,
IOAZAAA	Skipper flies		or compressed air equipment ad-
IMAAFA	Stored product		justed to deliver a fine mist or
	insects		fog. Force the fog or mist at an
			upward angle distributing it uni-
			formly throughout the entire
			area.
			Formulated with one or a combina-
			tion of: lethane, piperonyl
			butoxide, pyrethrins, or vapona.

EPA Compendium of Acceptable Uses

MALATHION

<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
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Commercial Establishments, Inedible cluster (continued)

INATANA	Khapra beetle	3X finished spray [2 gal/1,000 empty warehouses. sq.ft] (5 lb/gal EC)	Residual spray. Apply with sufficient pressure to interiors of empty warehouses.
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Refer to (Household), Domestic Dwellings, Indoor, for additional information.

(Domestic and Human Use)

/86003DA	Human Clothing (woolens and other fabrics)		Do not wear treated clothing while wet with spray. Dry clothing before use.
INATAFA ITBSABA	Carpet beetle Clothes moths	4X finished spray (4X PrL)	Mothproofing treatment. Brush woolens and other fabrics thoroughly prior to treatment. Spray thoroughly, especially seams and folds. Thoroughly spray interiors and containers, such as closets and cabinets. Repeat at 30 day intervals where treated items are not in moth-tight containers. Repeat otherwise as necessary.
/86002DA	<u>Humans</u>		
IMBEABA	Body louse	-- (1% D)	Human treatment. Apply by hand duster to crotch from front to rear down the neck and under arms. Wash with detergent any clothing, bed linens, blankets, and towels, that came in contact with infested area. Repeat at 14 day intervals as needed.
IMBEADA	Head louse		Human treatment. Apply to the head area. Repeat at 14 day intervals as needed.

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MALATHION

	<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
/B60010A	<u>Mattresses</u>		
IQAFACA	Bed bug	0.5-1% finished spray (5 lb/gal EC) (50-57% EC)** [MAI] 1:1 (2% RTU) or 2.85-5% finished spray (2.85% RTU) (4-5% PrL)	Mattress treatment. When diluting, dilute in deodorized kerosene. Apply lightly to all mattress surfaces in sufficient quantity to mist the fabric and generously to beds and woodwork. Wet all possible hiding places. May be formulated with piperonyl butoxide and pyrethrins.

AERIAL, MOTHPROOFING AND TANK MIX APPLICATIONS

9001500 AAAAAAA	<u>Aerial Application</u>	-- Refer to <u>TERRESTRIAL FOOD CROP</u> <u>(Agricultural Crops)</u> All Sites <u>(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)</u> All Sites <u>TERRESTRIAL NONFOOD CROP</u> <u>(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)</u> All Sites <u>AQUATIC FOOD CROP</u> <u>(Agricultural Crops)</u> All Sites <u>AQUATIC NONFOOD</u> <u>(Aquatic Sites)</u> Intermittently Flooded Areas <u>FORESTRY</u> All Sites <u>INDOOR</u> <u>(Animals and Their Man-made Premises)</u> Beef Cattle - Feed Lots and Holding Pens
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<u>Site and Pest</u>	<u>Dosages and Formulation(s)</u>	<u>Tolerance, Use, Limitations</u>
9900300 AAAAAAA	<u>Tank Mix</u> --	Refer to <u>TERRESTRIAL FOOD CROP</u> <u>(Agricultural Crops)</u> Apple, Cherry, Cotton, Nectarine, Peach, Pear, Plum, Prune <u>INDOOR</u> <u>(Agricultural Crops)</u> Field or Garden Seeds
9009000 AAAAAAA	<u>Mothproofing</u> --	Refer to <u>INDOOR</u> <u>(Domestic and Human Use)</u> Human Clothing (woolens and other fabrics)

IV. BIBLIOGRAPHY APPENDICES

BIBGUIDE-1

GUIDE TO USE OF THIS BIBLIOGRAPHY

1. **CONTENT OF BIBLIOGRAPHY.** This bibliography contains citations of all studies considered relevant by EPA in arriving at the positions and conclusions stated elsewhere in the Standard. Primary sources for studies in this bibliography have been the body of data submitted to EPA and its predecessor agencies in support of past regulatory decisions. Selections from other sources including the published literature, in those instances where they have been considered, will be included.
2. **UNITS OF ENTRY.** The unit of entry in this bibliography is called a "study." In the case of published materials, this corresponds closely to an article. In the case of unpublished materials submitted to the Agency, the Agency has sought to identify documents at a level parallel to the published article from within the typically larger volumes in which they were submitted. The resulting "studies" generally have a distinct title (or at least a single subject), can stand alone for purposes of review, and can be described with a conventional bibliographic citation. The Agency has attempted also to unite basic documents and commentaries upon them, treating them as a single study.
3. **IDENTIFICATION OF ENTRIES.** The entries in this bibliography are sorted numerically by "Master Record Identifier," or MRID, number. This number is unique to the citation, and should be used at any time specific reference is required. It is not related to the six-digit "Accession Number" which has been used to identify volumes of submitted studies; see paragraph 4(d)(4) below for a further explanation. In a few cases, entries added to the bibliography late in the review may be preceded by a nine-character temporary identifier. These entries are listed after all MRID entries. This temporary identifier number is also to be used whenever specific reference is needed.
4. **FORM OF ENTRY.** In addition to the Master Record Identifier (MRID), each entry consists of a citation containing standard elements followed, in the case of material submitted to EPA, by a description of the earliest known submission. Bibliographic conventions used reflect the standards of the American National Standards Institute (ANSI), expanded to provide for certain special needs.

BIBGUIDE-2

- a. Author. Whenever the Agency could confidently identify one, the Agency has chosen to show a personal author. When no individual was identified, the Agency has shown an identifiable laboratory or testing facility as author. As a last resort, the Agency has shown the first submitter as author.
- b. Document Date. When the date appears as four digits with no question marks, the Agency took it directly from the document. When a four-digit date is followed by a question mark, the bibliographer deduced the date from evidence in the document. When the date appears as (19??), the Agency was unable to determine or estimate the date of the document.
- c. Title. In some cases, it has been necessary for Agency bibliographers to create or enhance a document title. Any such editorial insertions are contained between square brackets.
- d. Trailing Parentheses. For studies submitted to the Agency in the past, the trailing parentheses include (in addition to any self-explanatory text) the following elements describing the earliest known submission:
 - (1) Submission Date. The date of the earliest known submission appears immediately following the word "received."
 - (2) Administrative Number. The next element, immediately following the word "under," is the registration number, experimental use permit number, petition number, or other administrative number associated with the earliest known submission.
 - (3) Submitter. The third element is the submitter, following the phrase "submitted by." When authorship is defaulted to the submitter, this element is omitted.
 - (4) Volume Identification (Accession Numbers). The final element in the trailing parentheses identifies the EPA accession number of the volume in which the original submission of the study appears. The six-digit accession number follows the symbol "CDL," standing for "Company Data Library." This accession number is in turn followed by an alphabetic suffix which shows the relative position of the study within the volume. For example, within accession number 123456, the first study would be 123456-A; the second, 123456-B; the 26th, 123456-Z; and the 27th, 123456-AA.

OFFICE OF PESTICIDE PROGRAMS
REGISTRATION STANDARD BIBLIOGRAPHY
Citations Considered to be Part of the Data Base Supporting
Registrations Under the Malathion Standard

- | <u>MRID</u> | <u>CITATION</u> |
|-------------|--|
| 00001999 | Atkins, L., Jr.; Anderson, L.D. (1967) Toxicity of Pesticides and Other Agricultural Chemicals to Honey Bees: Laboratory Studies. (Unpublished study received Jan 30, 1969 under 9G0802; prepared by Univ. of California--Riverside, Dept. of Entomology, submitted by Hercules, Inc., Agricultural Chemicals, Wilmington, Del.; CDL:093111-D) |
| 00005309 | Eschle, J.L.; Miller, J.A. (1967) Ultra-Low-Volume Application of Insecticides to Cattle for Control of the Horn Fly: Report No. 20820. (Unpublished study received Feb 6, 1969 under 11556-16; prepared by U.S. Agricultural Research Service, Entomology Research Div., Livestock Insects Investigations for Chemagro Corp., submitted by Bayvet, Shawnee Mission, Kans.; CDL: 007194-G) |
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V. FORMS APPENDICES

FIFRA SECTION 3(C)(2)(B) SUMMARY SHEET		EPA REGISTRATION NO.
PRODUCT NAME		
APPLICANT'S NAME		DATE GUIDANCE DOCUMENT ISSUED
With respect to the requirement to submit "generic" data imposed by the FIFRA section 3(C)(2)(B) notice contained in the referenced Guidance Document, I am responding in the following manner:		
☐ 1. I will submit data in a timely manner to satisfy the following requirements. If the test procedures I will use deviate from (or are not specified in) the Registration Guidelines or the Protocols contained in the Reports of Expert Groups to the Chemicals Group, OECD Chemicals Testing Programme, I enclose the protocols that I will use:		
☐ 2. I have entered into an agreement with one or more other registrants under FIFRA section 3(C)(2)(B)(ii) to satisfy the following data requirements. The tests, and any required protocols, will be submitted to EPA by:		
NAME OF OTHER REGISTRANT		
☐ 3. I enclose a completed "Certification of Attempt to Enter Into an Agreement with Other Registrants for Development of Data" with respect to the following data requirements:		
☐ 4. I request that you amend my registration by deleting the following uses (this option is not available to applicants for new products):		
☐ 5. I request voluntary cancellation of the registration of this product. (This option is not available to applicants for new products.)		
REGISTRANT'S AUTHORIZED REPRESENTATIVE	SIGNATURE	DATE

CERTIFICATION OF ATTEMPT TO ENTER INTO AN AGREEMENT WITH OTHER REGISTRANTS FOR DEVELOPMENT OF DATA		
(To qualify, certify <u>ALL</u> four items)		GUIDANCE DOCUMENT DATE
		ACTIVE INGREDIENT
1. I am duly authorized to represent the following firm(s) who are subject to the requirements of a Notice under FIFRA Section 3(c)(2)(B) contained in a Guidance Document to submit data concerning the active ingredient:		EPA COMPANY NUMBER
NAME OF FIRM		
(This firm or group of firms is referred to below as "my firm".)		
2. My firm is willing to develop and submit the data as required by that Notice, if necessary. However, my firm would prefer to enter into an agreement with one or more other registrants to develop jointly, or to share in the cost of developing, the following required items or data:		
3. My firm has offered in writing to enter into such an agreement. Copies of the offers are attached. That offer was irrevocable and included an offer to be bound by an arbitration decision under FIFRA Section 3(c)(2)(B)(iii) if final agreement on all terms could not be reached otherwise. This offer was made to the following firm(s) on the following date(s):		
NAME OF FIRM		DATE OF OFFER
However, none of those firm(s) accepted my offer.		
4. My firm requests that EPA not suspend the registration(s) of my firm's product(s), if any of the firms named in paragraph (3) above have agreed to submit the data listed in paragraph (2) above in accordance with the Notice. I understand EPA will promptly inform me whether my firm must submit data to avoid suspension of its registration(s) under FIFRA Section 3(c)(2)(B). (This statement does not apply to applicants for new products.) I give EPA permission to disclose this statement upon request.		
TYPED NAME	SIGNATURE	DATE

PRODUCT SPECIFIC DATA REPORT

EPA Reg. No. _____ Date _____

Guidance Document for _____

Registration Guideline No.	Name of Test	Test not required for my product listed above (check below)	I am complying with data requirements by		(For EPA Use Only) Accession Numbers Assigned
			Citing MRID Number or EPA Accession Number	Submit- ting Data (At- tached)	
\$158.120 PRODUCT CHEMISTRY					
61-1	Identity of ingredients				
61-2	Statement of composition				
61-3	Discussion of formation of ingredients				
62-1	Preliminary analysis				
62-2	Certification of limits				
62-3	Analytical methods for enforcement limits				
63-2	Color				
63-3	Physical state				
63-4	Odor				
63-5	Melting point				
63-6	Boiling point				
63-7	Density, bulk- density, or specific gravity				
63-8	Solubility				
63-9	Vapor pressure				
63-10	Dissociation constant				
63-11	Octanol/water partition coefficient				
63-12	pH				

Registration Guideline No.	Name of Test	Test not required for my product listed above (check below)	I am complying with data requirements by		(For EPA Use Only) Accession Numbers Assigned
			Citing MRID Number or EPA Accession Number	Submit- ting Data (At- tached)	
63-13	Stability				
63-14	Oxidizing/reducing reaction				
63-15	Flammability				
63-16	Explosibility				
63-17	Storage stability				
63-18	Viscosity				
63-19	Miscibility				
63-20	Corrosion characteristics				
63-21	Dielectric break- down voltage				
§158.135 TOXICOLOGY					
81-1	Acute oral toxicity, rat				
81-2	Acute dermal toxicity, rabbit				
81-3	Acute inhalation, toxicity, rat				
81-4	Primary eye irritation, rabbit				
81-5	Primary dermal irritation				
81-6	Dermal sensitiza- tion				

GENERIC DATA EXEMPTION STATEMENT

EPA Product Registration Number: _____

Registrant's Name and Address: _____

As an authorized representative of the registrant of the product identified above, I certify that:

(1) I have read and am familiar with the terms of the Notice from EPA dated _____ concerning a requirement for submission of "generic" data on the active ingredient _____ named under FIFRA Section 3(c)(2)(B).

(2) My firm requests that EPA not suspend the registration of our product, despite our lack of intent to submit the generic data in question, on the grounds that the product contains the active ingredient solely as the result of the incorporation into the product of another product which contains that active ingredient, which is registered under FIFRA Section 3, and which is purchased by us from another producer.

(3) An accurate Confidential Statement of Formula(CSF) for the above-identified product is attached to this statement. That formula statement indicates, by company name, registration number, and product name, the source of the subject active ingredient in my firm's product, or

The CSF dated _____ on file with EPA is complete, current and accurate and contains the information requested on the current CSF Form No. 8570-4. The registered source(s) of the above named active ingredient in my product(s) is/are _____ and their registration number(s) is/are _____.

My firm will apply for an amendment to the registration prior to changing the source of the active ingredient in our product.

(4) I understand, and agree on behalf of my firm, that if at any time any portion of this Statement is no longer true, or if my firm fails to comply with the undertakings made in this Statement, my firm's product's registration may be suspended under FIFRA Section 3(c)(2)(B).

(5) I further understand that if my firm is granted a generic data exemption for the product, my firm relies on the efforts of other persons to provide the Agency with the required generic data. If the registrant(s) who have committed to generate and submit the required data fail to take appropriate steps to meet requirements or are no longer in compliance with this Notice's data requirements, the Agency will consider that both they and my firm are not in compliance and will normally initiate proceedings to suspend the registrations of my firm's product(s) and their product(s), unless my firm commits to submit and submits the required data in the specified time frame. I understand that, in such cases, the Agency generally will not grant a time extension for submitting the data.

Registrant's authorized representative: _____
(Signature)

Dated: _____
(Typed)

CERTIFICATION WITH RESPECT TO CITATION OF DATA

EPA File Symbol/Reg. No. _____ Date of application _____

Name of Product _____

Applicant's Name and Address _____

1. This application is supported by all data submitted or cited in the application. In addition, if cite-all options are indicated, this application is supported by all data in the Agency's files that concern the properties or effects of this product or of any other product that is identical or substantially similar, and that is one of the types of data that would be required to be submitted if this application sought the initial registration of a product of identical or similar composition and intended uses under the data requirements in effect on the date of approval of this application.

2. I certify that, for each study cited in support of this application for registration that is an exclusive use study, I have obtained the written permission of the original data submitter to cite that study.

3. I certify that, for each study cited in support of this application for registration that is not an exclusive use study:

I have obtained the written permission of the original data submitter to cite that study; or

I have notified in writing the companies who have submitted data I have cited to support this application and have offered to: (a) Pay compensation for those data in accordance with section 3(c)(1)(D) and 3(c)(2)(D) of the Federal Insecticide, Fungicide and Rodenticide Act; and (b) Commence negotiations to determine which data are subject to the compensation requirement of FIFRA and the amount and terms of compensation due, if any. The companies I have notified are: (Check one)

☐ All companies listed on the Pesticide Data Submitters List for all active ingredients contained in my product (Cite-all method or cite-all option under Selective Method). (Also sign the General Offer to Pay Statement below.)

☐ Those companies who have submitted the studies which I have cited (Selective method)

Date _____ Signature _____

Title _____

General Offer to Pay: I hereby offer and agree to pay compensation to other persons, with regard to the approval of this application, to the extent required by FIFRA sec. 3(c)(1)(D) and 3(c)(2)(D).

Date _____ Signature _____

Title _____